Pioneer sound.vision.soul

Service Manual

TOYOTA

ORDER NO.
CRT3251

SCION AUDIO SYSTEM SINGLE CD DECK

DEH-M8047ZT/UC

COMPACT disc DIGITAL AUDIO TEXT

VEHICLE	DESTINATION	PRODUCED AFTER	TOYOTA PART No.	ID No.	PIONEER MODEL No.
xA, xB, tC	U.S.A., CANADA	May 2004	86120-0W100	T1804	DEH-M8047ZT/UC

This service manual should be used together with the manual(s) listed below. For the parts numbers, adjustments, etc. which are not shown in this manual, refer to the following manual(s).

Model No.	Order No.	Mech.Module	Remarks
DEH-M8037ZT/UC	CRT3062		
CX-3057	CRT3026	S10MP3	CD Mech. Module:Circuit Description, Mech. Description, Disassembly

EXPLODED VIEWS AND PARTS LIST

PACKING(Page 5)

● **PACKING SECTION PARTS LIST**

Mark	No.	Description	DEH-M8037ZT/UC	DEH-M8047ZT/UC
	8	Contain Box	CHL5058	CHL5227
	11	Owner's Manual	CRB1826	CRB1933

PIONEER CORPORATION 4-1, Meguro 1-chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER EUROPE NV Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936

K-ZZD. APR. 2004 printed in Japan

EXTERIOR(Page 6)

● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	DEH-M8037ZT/UC	DEH-M8047ZT/UC
	6	CD Mechanism Module(S10MP3)	CXK5680	CXK5682
	8	Case	CNB2842	CNB3036
	12	Main Unit	CWM8737	CWM9479
	50	Keyboard Unit	CWM8738	CWM9481
	58	Grille Unit	CXC1323	CXC3124

CD MECHANISM MODULE(Page 8)

● CD MECHANISM MODULE SECTION PARTS LIST

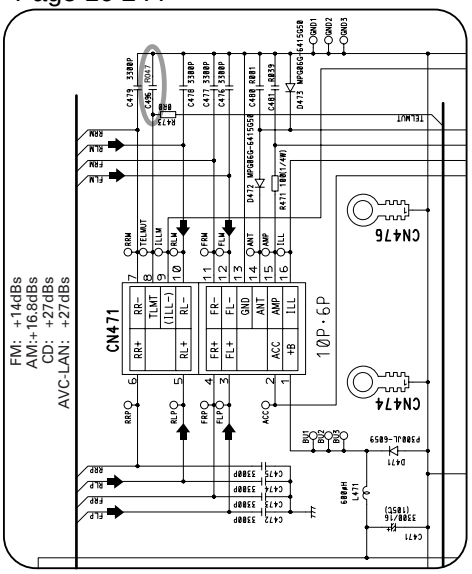
Mark	No.	Description	DEH-M8037ZT/UC	DEH-M8047ZT/UC
	1	CD Core Unit(S10MP3)	CWX2810	CWX3054

ELECTRICAL PARTS LIST(Page 38)

Main Unit

Circuit Symbol & No.	Part Name	DEH-M8037ZT/UC	DEH-M8047ZT/UC
IC701	IC	PD5861A	PEG003A
R764		RS1/16S102J	RS1/16S152J
R765		RS1/16S102J	RS1/16S152J
C496		Not used	CKSQYB473K50

Page 16 2-A



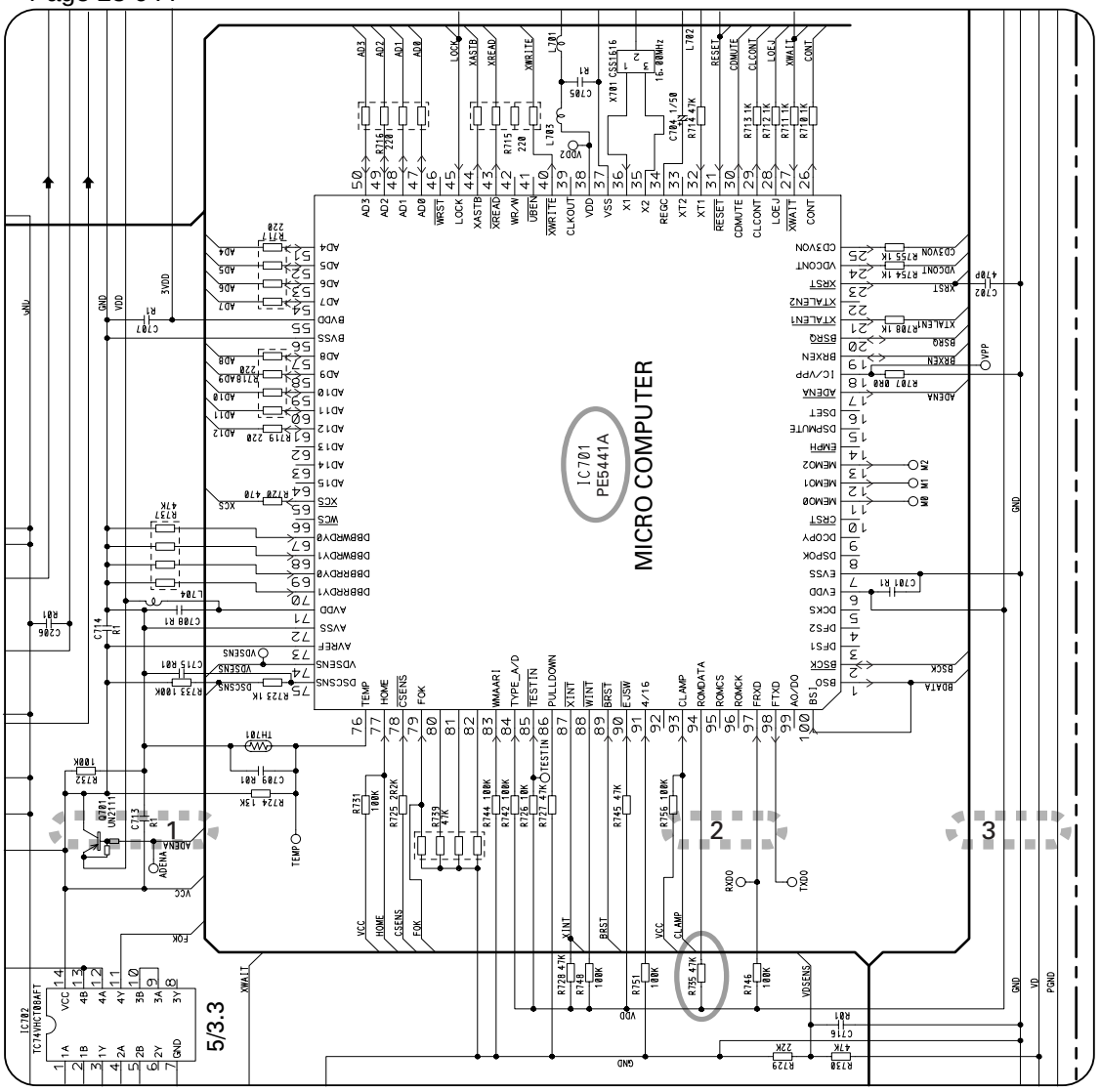
Keyboard Unit

Circuit Symbol & No.	Part Name	DEH-M8037ZT/UC	DEH-M8047ZT/UC
S901-S906	Switch	CSG1154	CSG1169
S907,S908	Switch	CSG1154	CSG1171
S909-S916	Switch	CSG1154	CSG1169
S917,S918	Switch	CSG1154	CSG1171
S919-S924	Switch	CSG1154	CSG1169

CD Core Unit (S10MP3)

Circuit Symbol & No.	Part Name	DEH-M8037ZT/UC	DEH-M8047ZT/UC
IC701	IC	PE5370B	PE5441A
R735		Not used	RS1/16SS473J

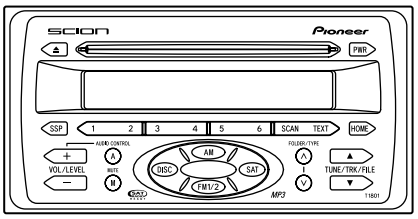
Page 23 6-A



Pioneer *sound.vision.soul*

Service Manual

TOYOTA



DEH-M8037ZT/UC

ORDER NO.
CRT3062

SCION AUDIO SYSTEM SINGLE CD DECK

DEH-M8037ZT UC

VEHICLE	DESTINATION	PRODUCED AFTER	TOYOTA PART No.	ID No.	PIONEER MODEL No.
xA, xB	U.S.A.	April 2003	86120-0W080	T1801	DEH-M8037ZT/UC

● This service manual should be used together with the following manual(s):

Model No.	Order No.	Mech. Module	Remarks
CX-3057	CRT3026	S10MP3	CD Mech. Module:Circuit Description, Mech.Description, Disassembly

For details, refer to "Important symbols for good services".

PIONEER CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
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K-ZZD. APR. 2003 Printed in Japan

[Important symbols for good services]
In this manual, the symbols shown-below indicate that adjustments, settings or cleaning should be made securely.
When you find the procedures bearing any of the symbols, be sure to fulfill them:

1. Product safety

You should conform to the regulations governing the product (safety, radio and noise, and other regulations), and should keep the safety during servicing by following the safety instructions described in this manual.

2. Adjustments

To keep the original performances of the product, optimum adjustments or specification confirmation is indispensable. In accordance with the procedures or instructions described in this manual, adjustments should be performed.

3. Cleaning

For optical pickups, tape-deck heads, lenses and mirrors used in projection monitors, and other parts requiring cleaning, proper cleaning should be performed to restore their performances.

4. Shipping mode and shipping screws

To protect the product from damages or failures that may be caused during transit, the shipping mode should be set or the shipping screws should be installed before shipping out in accordance with this manual, if necessary.

5. Lubricants, glues, and replacement parts

Appropriately applying grease or glue can maintain the product performances. But improper lubrication or applying glue may lead to failures or troubles in the product. By following the instructions in this manual, be sure to apply the prescribed grease or glue to proper portions by the appropriate amount.For replacement parts or tools, the prescribed ones should be used.

● CD Section Precaution

1. Before disassembling the unit, be sure to turn off the power. Unplugging and plugging the connectors during power-on mode may damage the ICs inside the unit.
2. To protect the pickup unit from electrostatic discharge during servicing, take an appropriate treatment (shorting-solder) by referring to "the DISASSEMBLY" on page 56.
3. After replacing the pickup unit, be sure to check the grating. (See p.49.)

SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer.
Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual.
Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely; you should not risk trying to do so and refer the repair to a qualified service technician.

CONTENTS

COMPACT disc DIGITAL AUDIO TEXT

1. SPECIFICATIONS

General

Power source . . . . . 13.2 V DC
(10.5 – 16.0 V allowable)
Grounding system . . . . . Negative type
Max. current consumption . . . . . 15 A
Backup current . . . . . 0.3 mA or less
Dimensions (W × H × D)
. . . . . 200 × 100 × 165 mm
Weight . . . . . 1.8 kg

Audio

Tone controls
(Bass) . . . . . Frequency : 55 Hz
Level : +11 dB -13 dB
(Treble) . . . . . Frequency : 14080 Hz
Level : +8 dB -10 dB
Maximum power output . . . . . 40 W × 4
Load impedance . . . . . 4 Ω

CD player

System . . . . Compact disc audio system
Usable discs . . . . . Compact disc
Signal format
Sampling frequency . . . . . 44.1 kHz
Number of quantization bits
. . . . . 16; linear
Number of channels . . . . . 2 (stereo)
MP3 decoding format
. . . . . MPEG1 & 2 Audio Layer 3

AM tuner

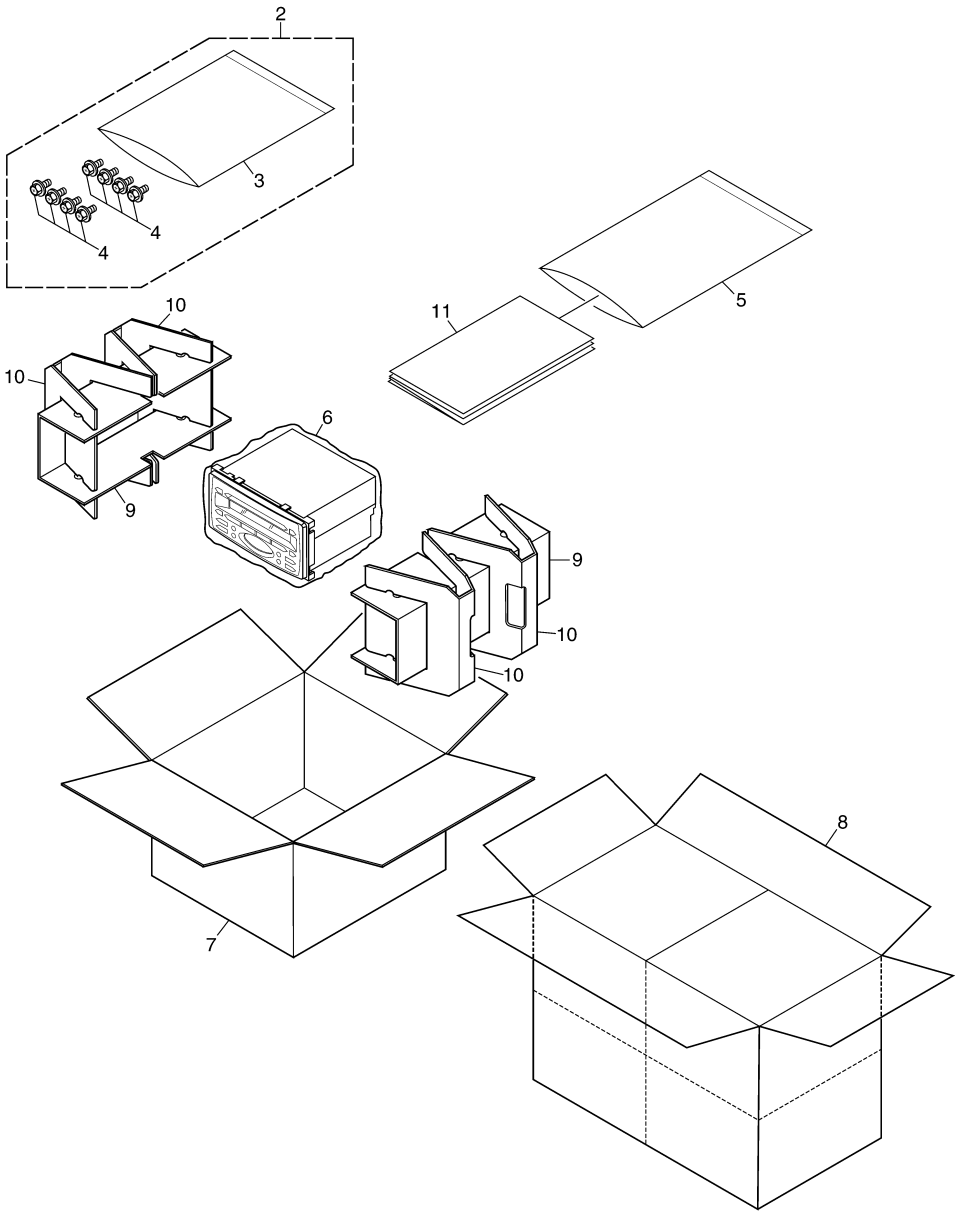
Frequency range . . . . . 530 – 1710 kHz

FM tuner

Frequency range . . . . 87.75 – 107.9 MHz

2. EXPLODED VIEWS AND PARTS LIST

2.1 PACKING



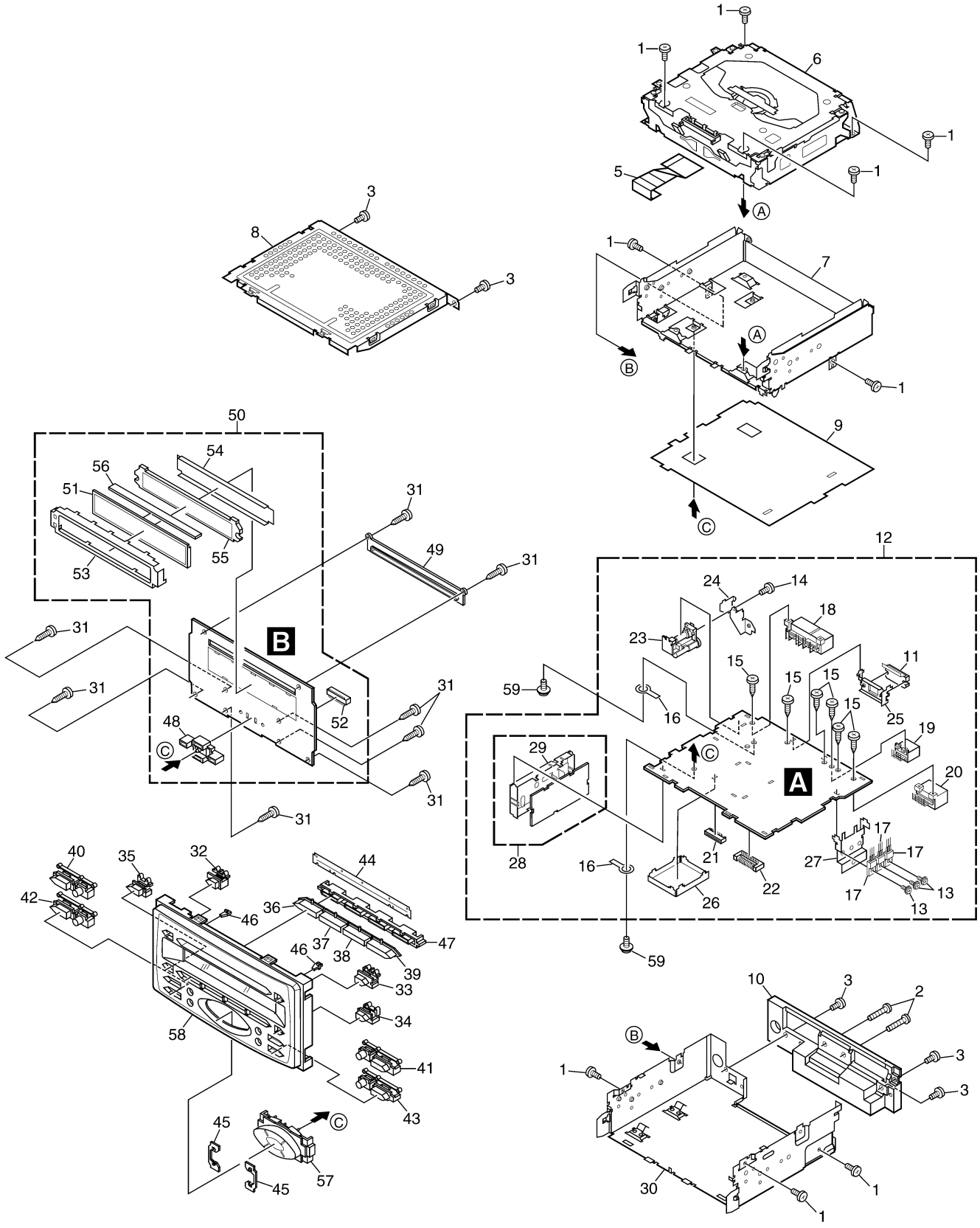
NOTE:

- Parts marked by "*" are generally unavailable because they are not in our Master Spare Parts List.
- Screws adjacent to ∇ mark on the product are used for disassembly.
- For the applying amount of lubricants or glue, follow the instructions in this manual.
  (In the case of no amount instructions, apply as you think it appropriate.)

● PACKING SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	•••••	
	2	Screw Assy	CEA3954
*	3	Polyethylene Bag	CEG-127
	4	Screw	HMF50P080FTC
*	5	Polyethylene Bag	CEG1116
*	6	Polyethylene Bag	CEG1322
	7	Carton	CHA3274
	8	Contain Box	CHL5058
	9	Protector	CHP2140
	10	Protector	CHP2141
	11	Owner's Manual (English)	CRB1826

2.2 EXTERIOR


A
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57
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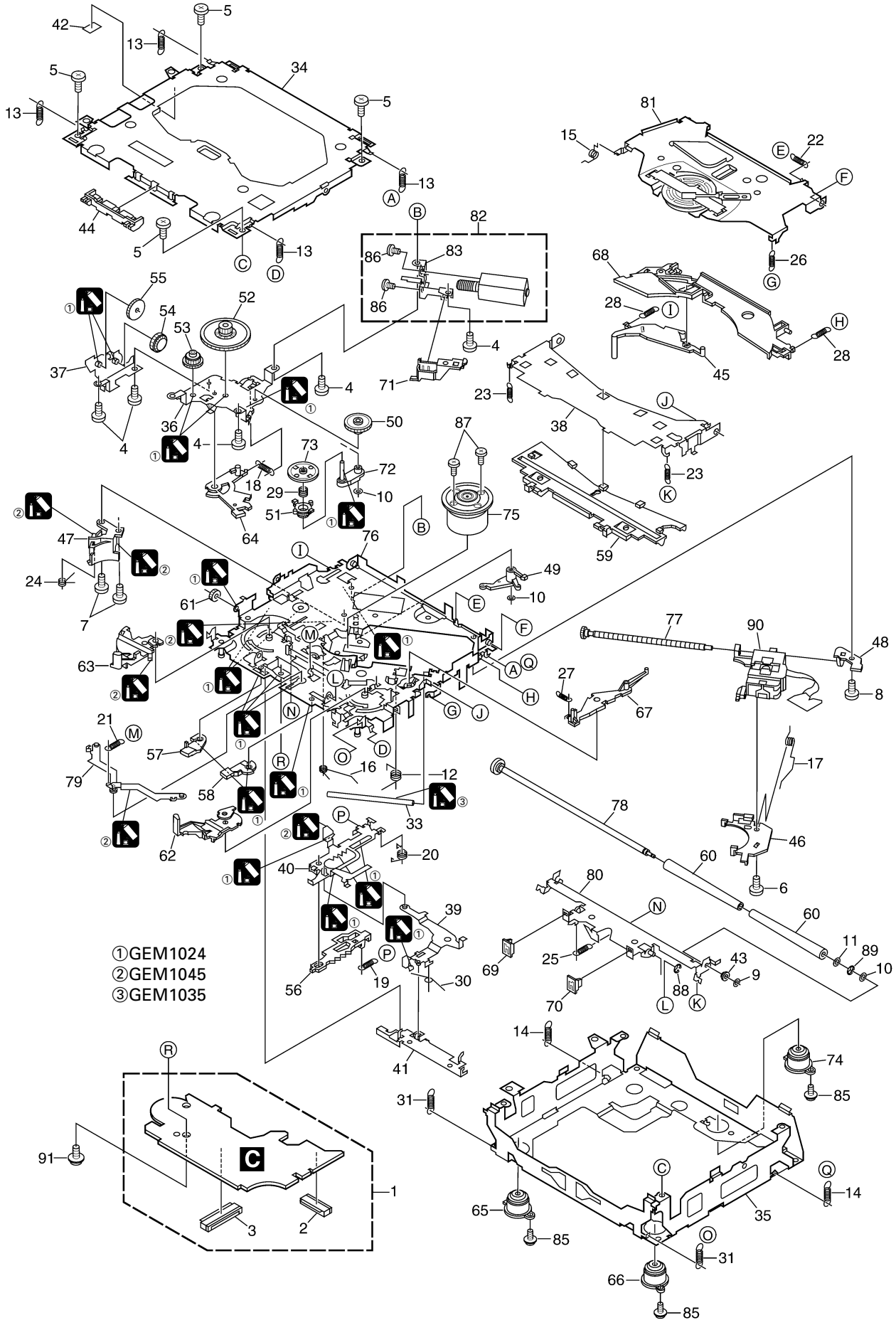
59
A
B
C

● EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
	1	Screw	BSZ26P050FTC
	2	Screw	BSZ26P140FTC
	3	Screw	BSZ30P080FTC
	4	•••••	
	5	Connector	CDE7172
	6	CD Mechanism Module(S10MP3)	CXK5680
	7	Chassis	CNA2618
	8	Case	CNB2842
	9	Insulator	CNM8107
	10	Heat Sink	CNR1683
	11	IC(IC801)	TDA7386
	12	Main Unit	CWM8737
	13	Screw	ASZ26P080FTC
	14	Screw	BMZ30P040FTC
	15	Screw(M3x6)	CBA1393
	16	Terminal(CN474,476)	CKF1064
	17	Transistor(Q431,441,850)	2SB1185
	18	Connector(CN471)	CKM1222
	19	Connector(CN473)	CKM1350
	20	Connector(CN472)	CKM1351
	21	Connector(CN601)	CKS3837
	22	Connector(CN479)	CKS4670
	23	Connector(CN501)	CKX1064
	24	Holder	CNC9591
	25	Holder	CNC9592
*	26	Shield	CNC9595
	27	Holder	CND1460
	28	FM/AM Tuner Unit	CWE1630
	29	Holder	CNC8855
	30	Chassis Unit	CXC1012
	31	Screw	BPZ20P100FTC
	32	Button(EJECT)	CAC7884
	33	Button(PWR)	CAC7885
	34	Button(HOME)	CAC7887
	35	Button(SSP)	CAC7889
	36	Button(1,2)	CAC7890
	37	Button(3,4)	CAC7891
	38	Button(5,6)	CAC7892
	39	Button(SCAN,TEXT)	CAC7893
	40	Button(A)	CAC7894
	41	Button(UP)	CAC7895
	42	Button(M)	CAC8074
	43	Button(DOWN)	CAC8075
	44	Cover	CNM7433
	45	Cushion	CNM8306
	46	Lighting Conductor	CNV7542
	47	Holder	CNV7543
	48	Holder	CNV7544
	49	Guide	CNV7646
	50	Keyboard Unit	CWM8738
	51	LCD	CAW1809
	52	Connector(CN901)	CKS4671
	53	Holder	CND1423
	54	Sheet	CNM8437
	55	Lighting Conductor	CNV7540
	56	Connector	CNV7557
	57	Button Unit(SOURCE)	CXC1081
	58	Grille Unit	CXC1323
	59	Screw	ISS26P055FTC

2.3 CD MECHANISM MODULE



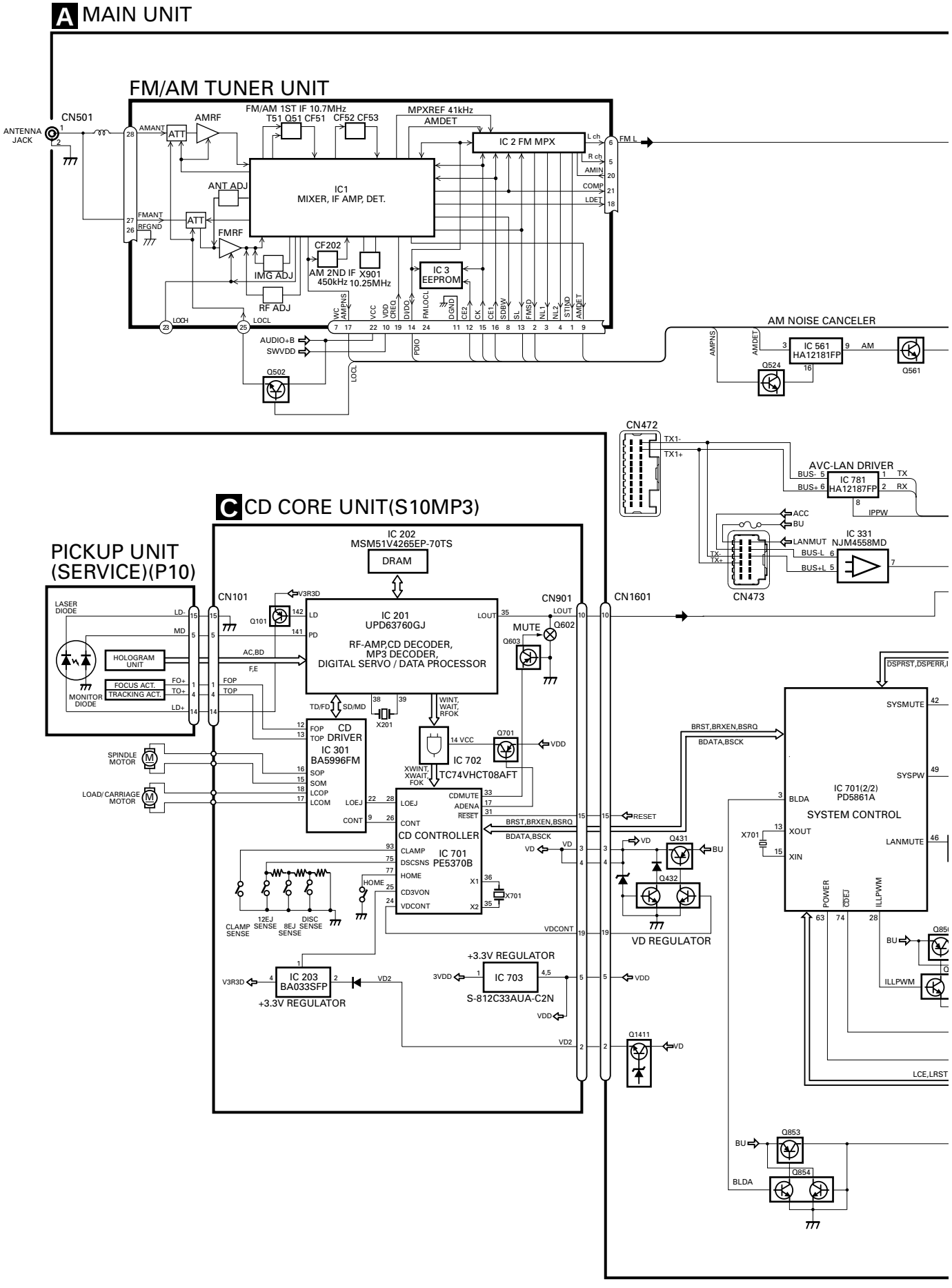
● CD MECHANISM MODULE SECTION PARTS LIST

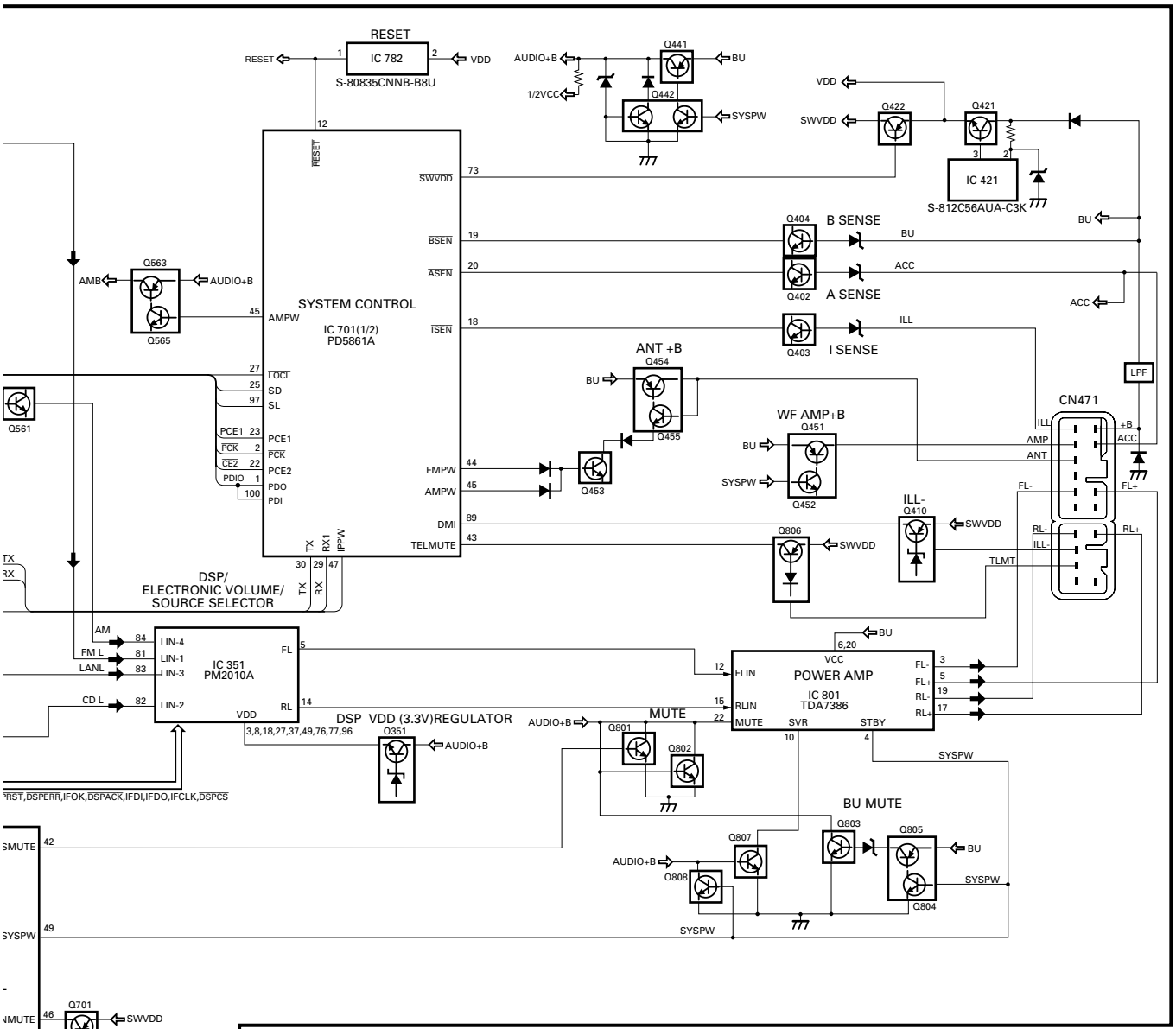
Mark No.	Description	Part No.
1	CD Core Unit(S10MP3)	CWX2810
2	Connector(CN101)	CKS4182
3	Connector(CN901)	CKS4017
4	Screw	BMZ20P035FTC
5	Screw	BSZ20P040FTC
6	Screw(M2x4)	CBA1362
7	Screw(M2x3)	CBA1511
8	Screw(M2x3)	CBA1527
9	Washer	CBF1037
10	Washer	CBF1038
11	Washer	CBF1060
12	Spring	CBH2390
13	Spring	CBH2606
14	Spring	CBH2607
15	Spring	CBH2608
16	Spring	CBH2609
17	Spring	CBH2610
18	Spring	CBH2611
19	Spring	CBH2612
20	Spring	CBH2613
21	Spring	CBH2614
22	Spring	CBH2615
23	Spring	CBH2616
24	Spring	CBH2617
25	Spring	CBH2620
26	Spring	CBH2621
27	Spring	CBH2641
28	Spring	CBH2642
29	Spring	CBH2643
30	Spring	CBH2659
31	Spring	CBH2688
32	•••••	
33	Shaft	CLA3845
34	Frame	CNC9962
35	Frame	CNC9963
36	Bracket	CNC9966
37	Bracket	CNC9967
38	Arm	CNC9968
39	Arm	CNC9973
40	Lever	CNC9983
41	Lever	CNC9984
42	Sheet	CNM8134
43	Collar	CNV6906
44	Guide	CNV6925
45	Arm	CNV7198

Mark No.	Description	Part No.
46	Rack	CNV7199
47	Holder	CNV7201
48	Holder	CNV7202
49	Arm	CNV7203
50	Gear	CNV7207
51	Gear	CNV7208
52	Gear	CNV7209
53	Gear	CNV7210
54	Gear	CNV7211
55	Gear	CNV7212
56	Rack	CNV7214
57	Arm	CNV7215
58	Arm	CNV7216
59	Guide	CNV7217
60	Roller	CNV7218
61	Gear	CNV7219
62	Arm	CNV7221
63	Arm	CNV7220
64	Arm	CNV7222
65	Damper	CNV7634
66	Damper	CNV7633
67	Arm	CNV7341
68	Arm	CNV7342
69	Guide	CNV7360
70	Guide	CNV7361
71	Holder	CNV7437
72	Arm	CNV7444
73	Gear	CNV7595
74	Damper	CNV7632
75	Motor Unit(M1)	CXB6007
76	Chassis Unit	CXB8728
77	Screw Unit	CXB8729
78	Gear Unit	CXB8731
79	Arm Unit	CXB8732
80	Arm Unit	CXB8735
81	Arm Unit	CXB8852
82	Motor Unit(M2)	CXB8933
83	Bracket	CNC9985
84	•••••	
85	Screw(M2x5)	EBA1028
86	Screw	JFZ20P020FTC
87	Screw	JGZ17P022FTC
88	Washer	YE15FTC
89	Washer	YE20FTC
90	Pickup Unit(Service)(P10)	CXX1664
91	Screw	IMS26P030FTC

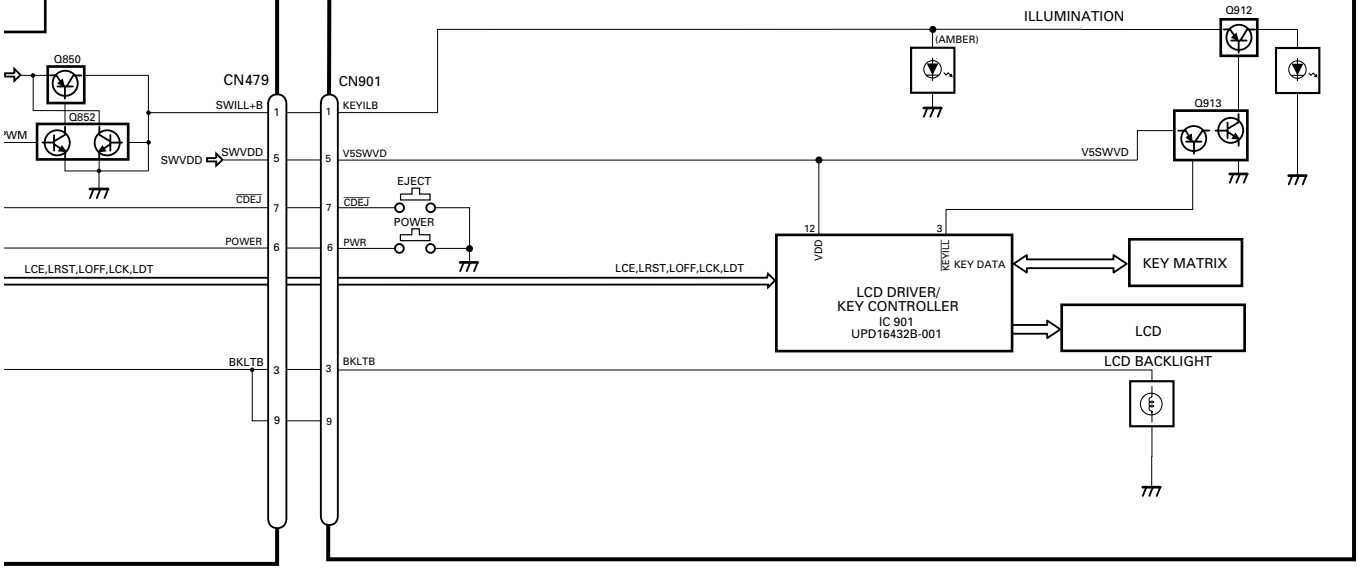
3. BLOCK DIAGRAM AND SCHEMATIC DIAGRAM

3.1 BLOCK DIAGRAM



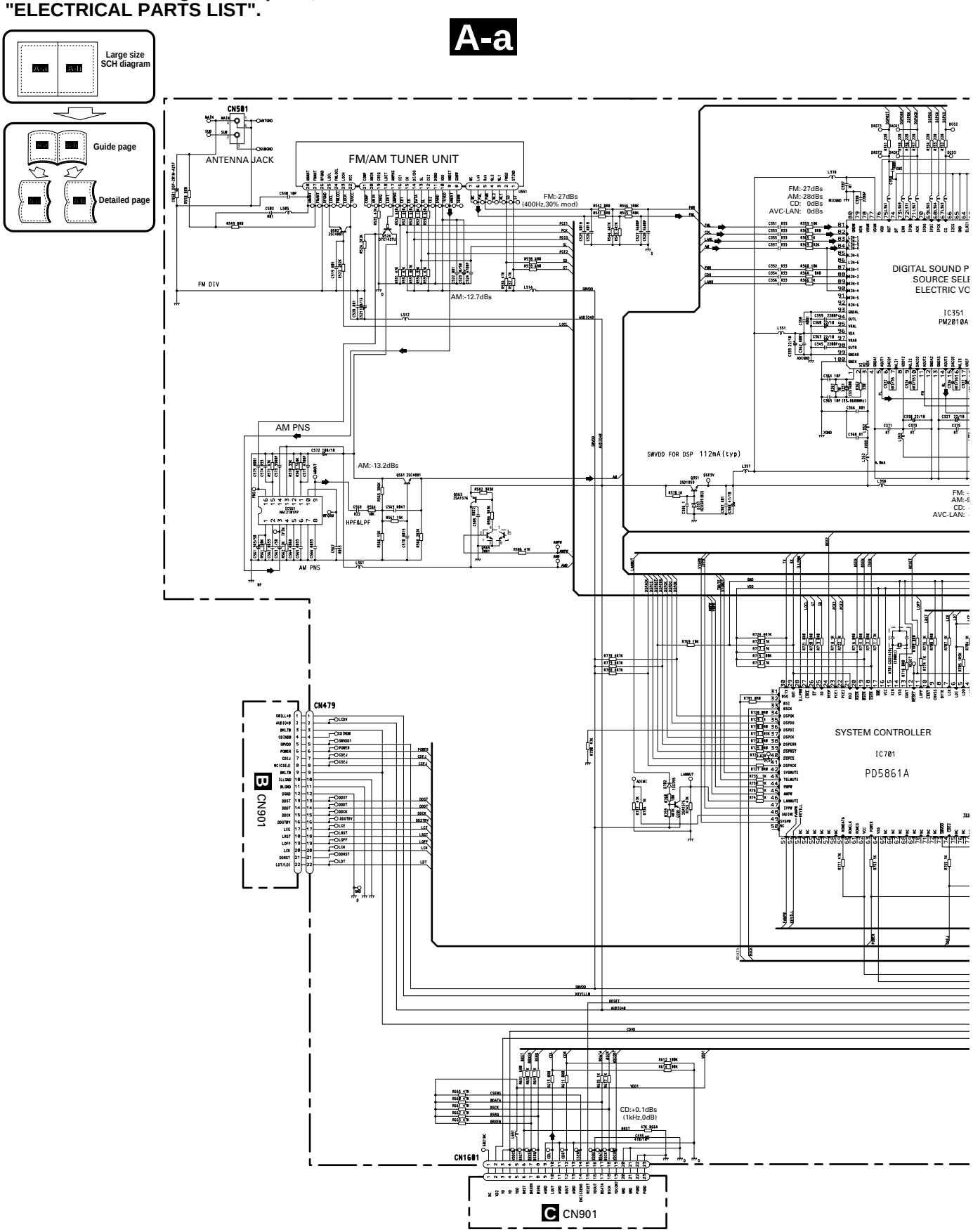


B KEYBOARD UNIT

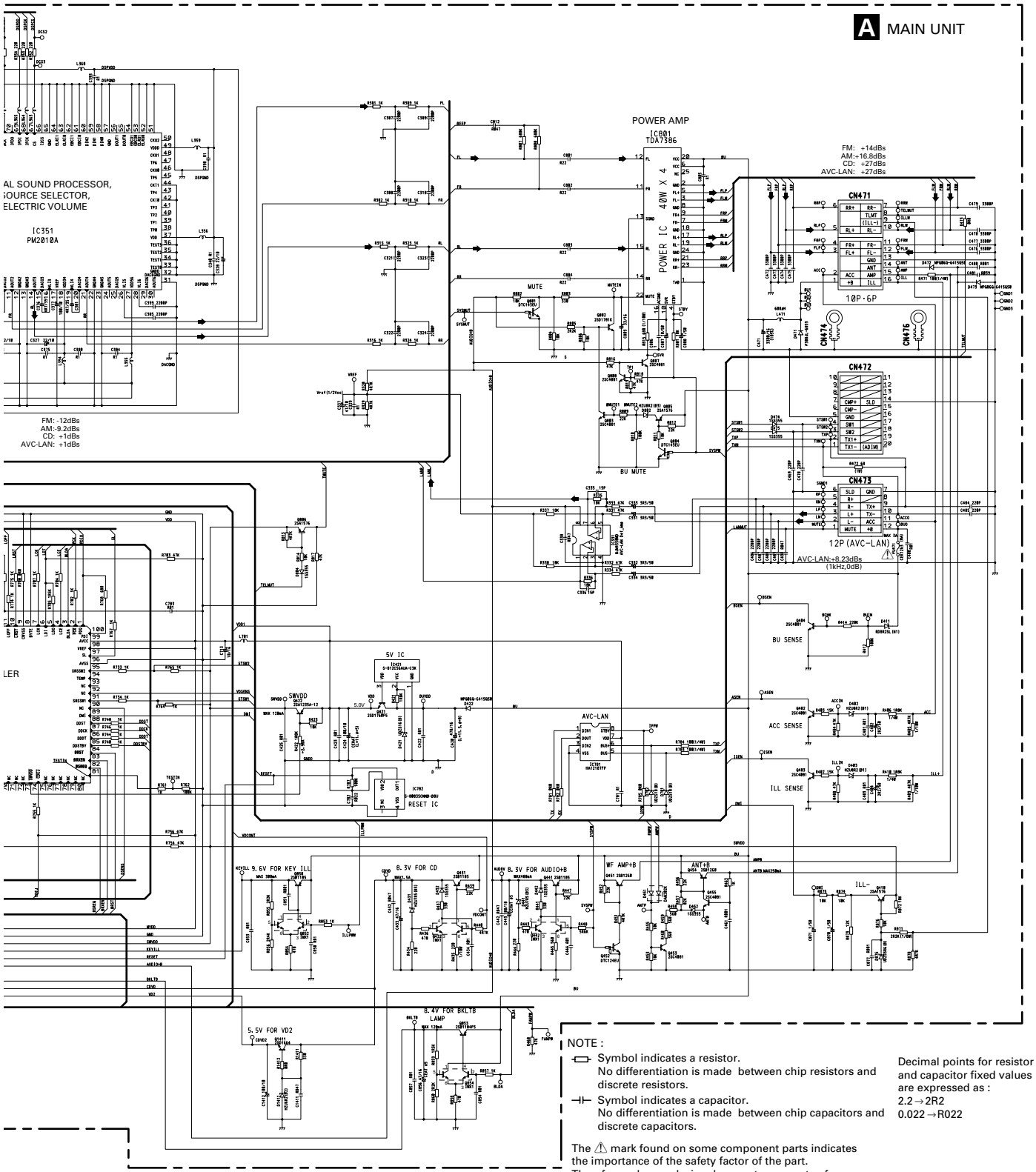


3.2 OVERALL CONNECTION DIAGRAM(GUIDE PAGE)

Note: When ordering service parts, be sure to refer to " EXPLODED VIEWS AND PARTS LIST" or "ELECTRICAL PARTS LIST".



A-b

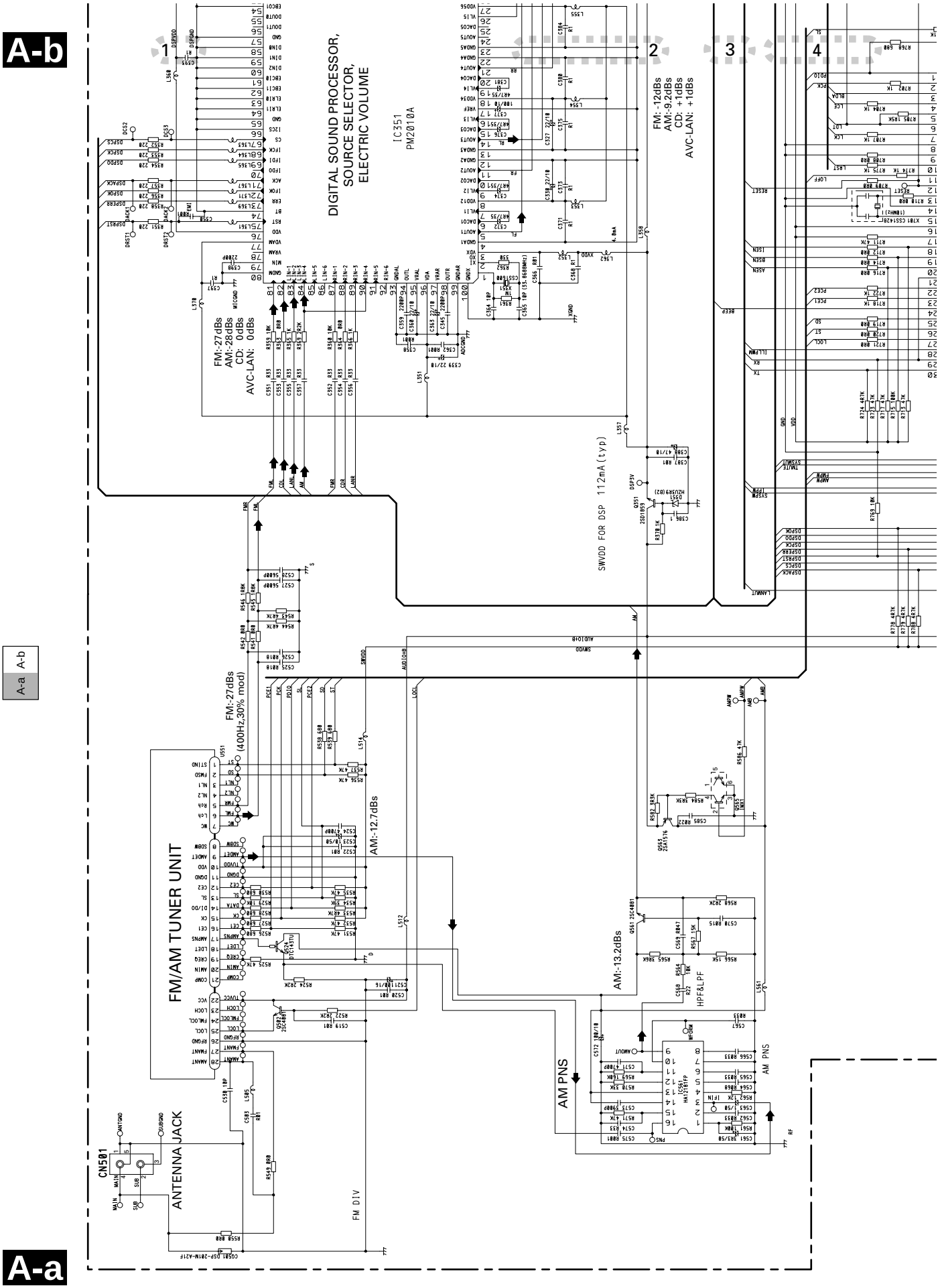


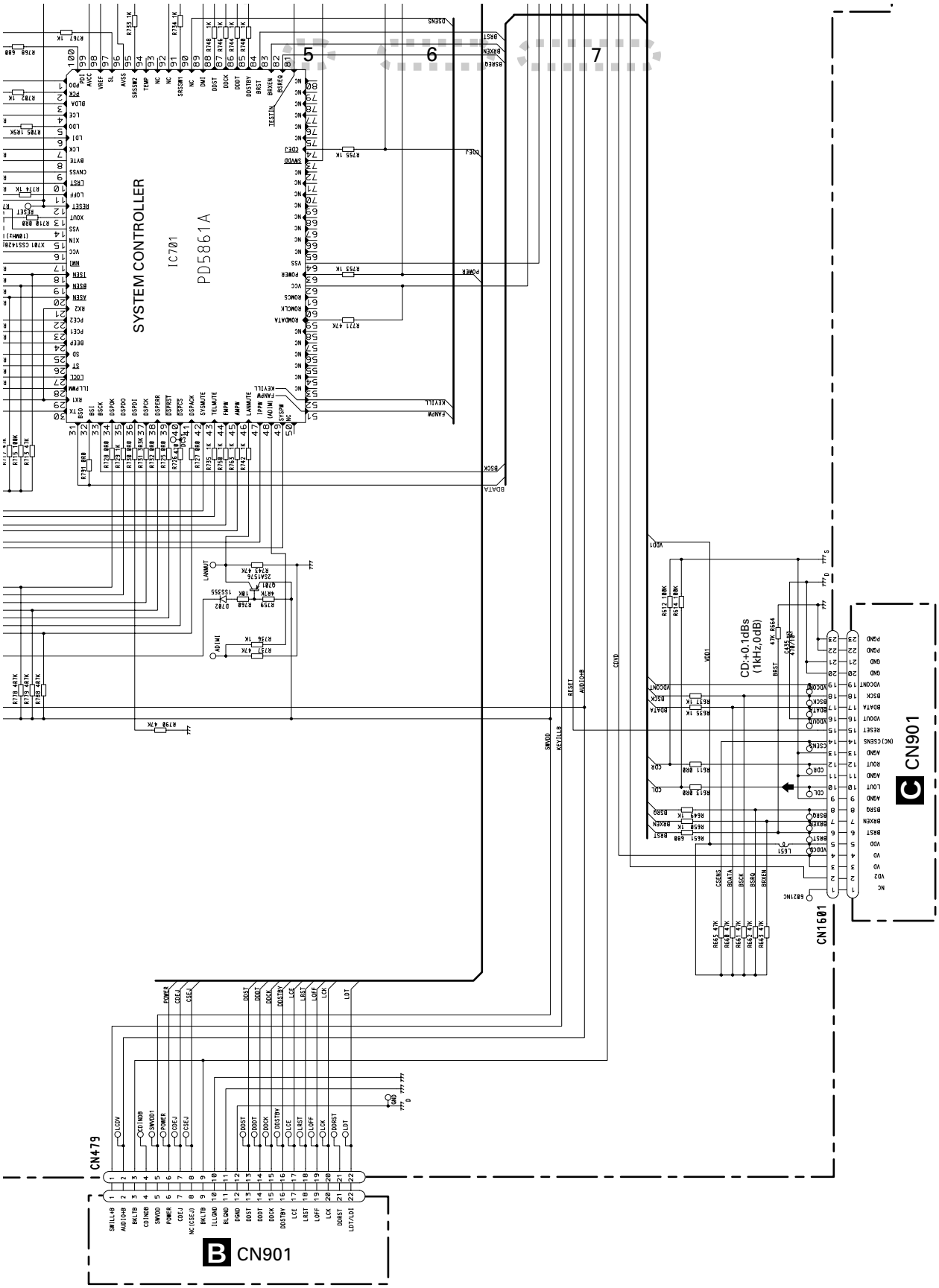
NOTE :

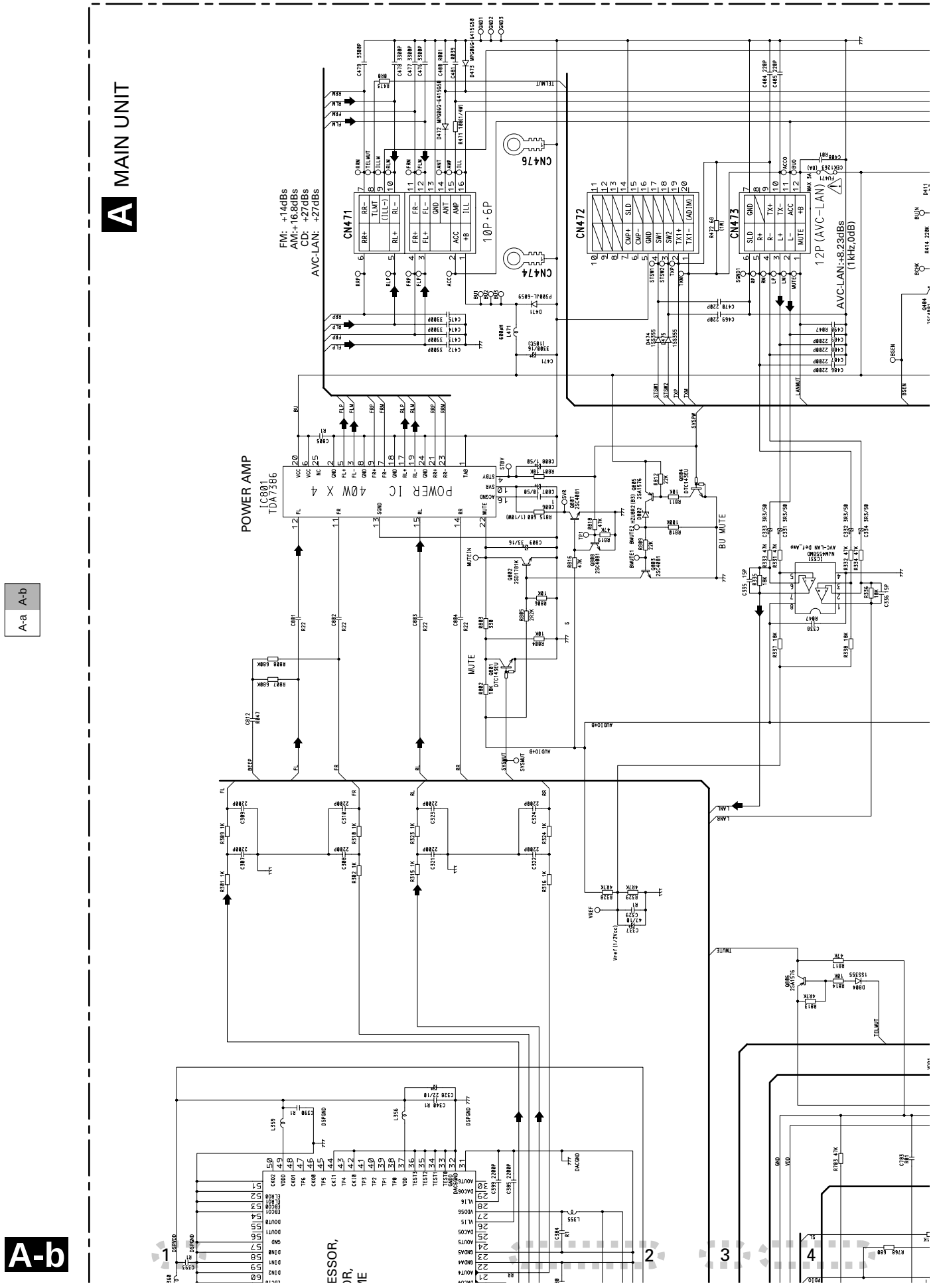
- Symbol indicates a resistor. No differentiation is made between chip resistors and discrete resistors.
- Symbol indicates a capacitor. No differentiation is made between chip capacitors and discrete capacitors.

The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

Decimal points for resistor and capacitor fixed values are expressed as :
2.2→2R2
0.022→R022


A-b
A-a
DIGITAL SOUND PROCESSOR,
SOURCE SELECTOR,
ELECTRIC VOLUME
IC351
PM2010A
FM:-27dBs
AM:-28dBs
CD: 0dBs
AVC-LAN: 0dBs
FM:-12dBs
AM:-9.2dBs
CD: +1dBs
AVC-LAN: +1dBs
SWVDD FOR DSP 112mA(typ)
FM:-27dBs
(400Hz,30% mod)
AM:-12.7dBs
AM:-13.2dBs
FM/AM TUNER UNIT
HPF&LPF
AM PNS
ANTENNA JACK
CN501
FM DIV


SYSTEM CONTROLLER
IC701
PD5861A
CN479
CN1601
CN901
CD:+0.1dBs
(1kHz,0dB)


A MAIN UNIT
POWER AMP
IC801
TDA7386
POWER IC 40W X 4
CN471
CN472
CN473
CN474
CN476
10P·6P
12P (AVC-LAN)
FM: +14dBs
AM:+16.8dBs
CD: +27dBs
AVC-LAN: +27dBs
AVC-LAN:+8.23dBs
(1kHz,0dB)
MUTE
BU MUTE
A-b
A-a
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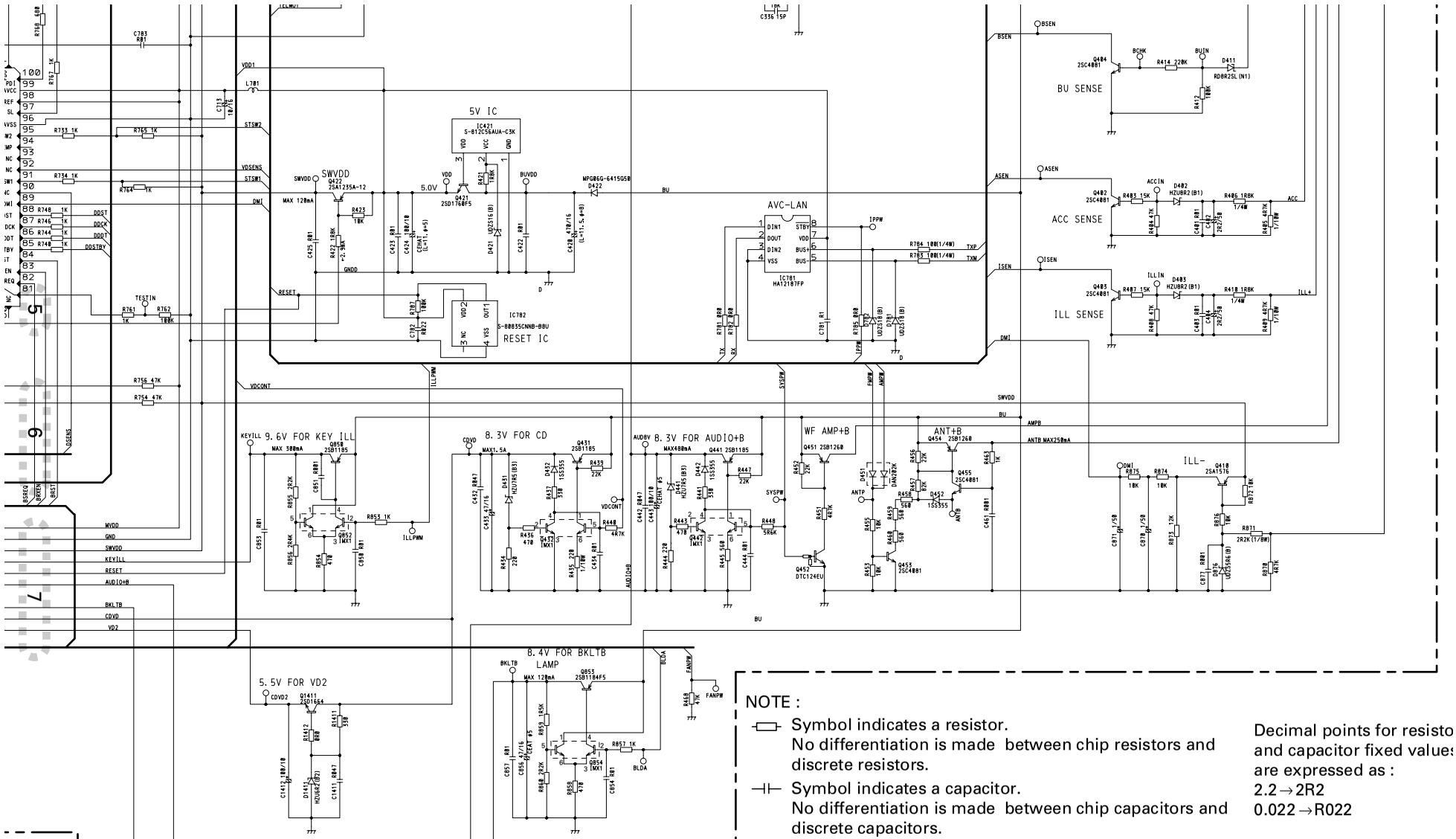
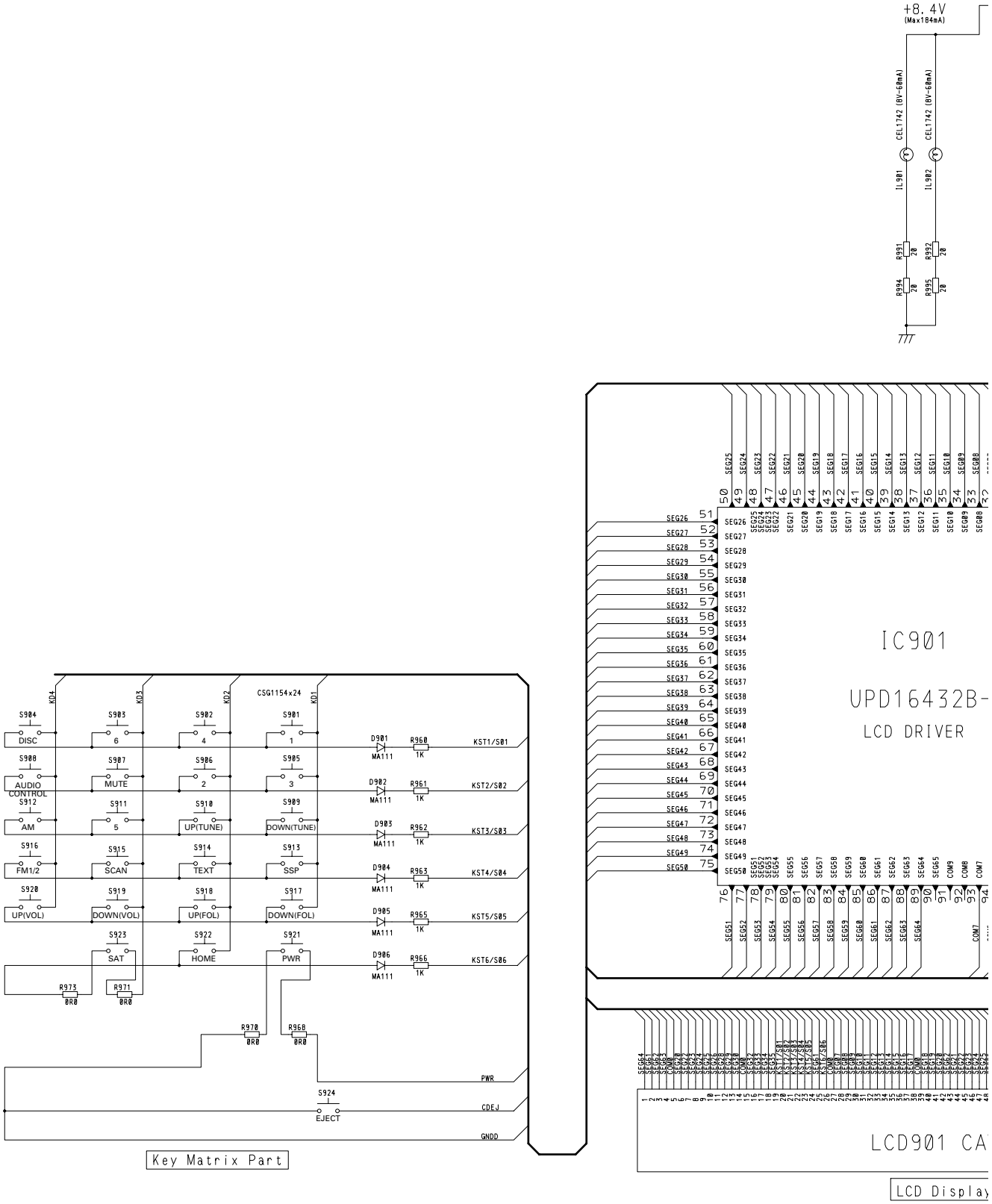
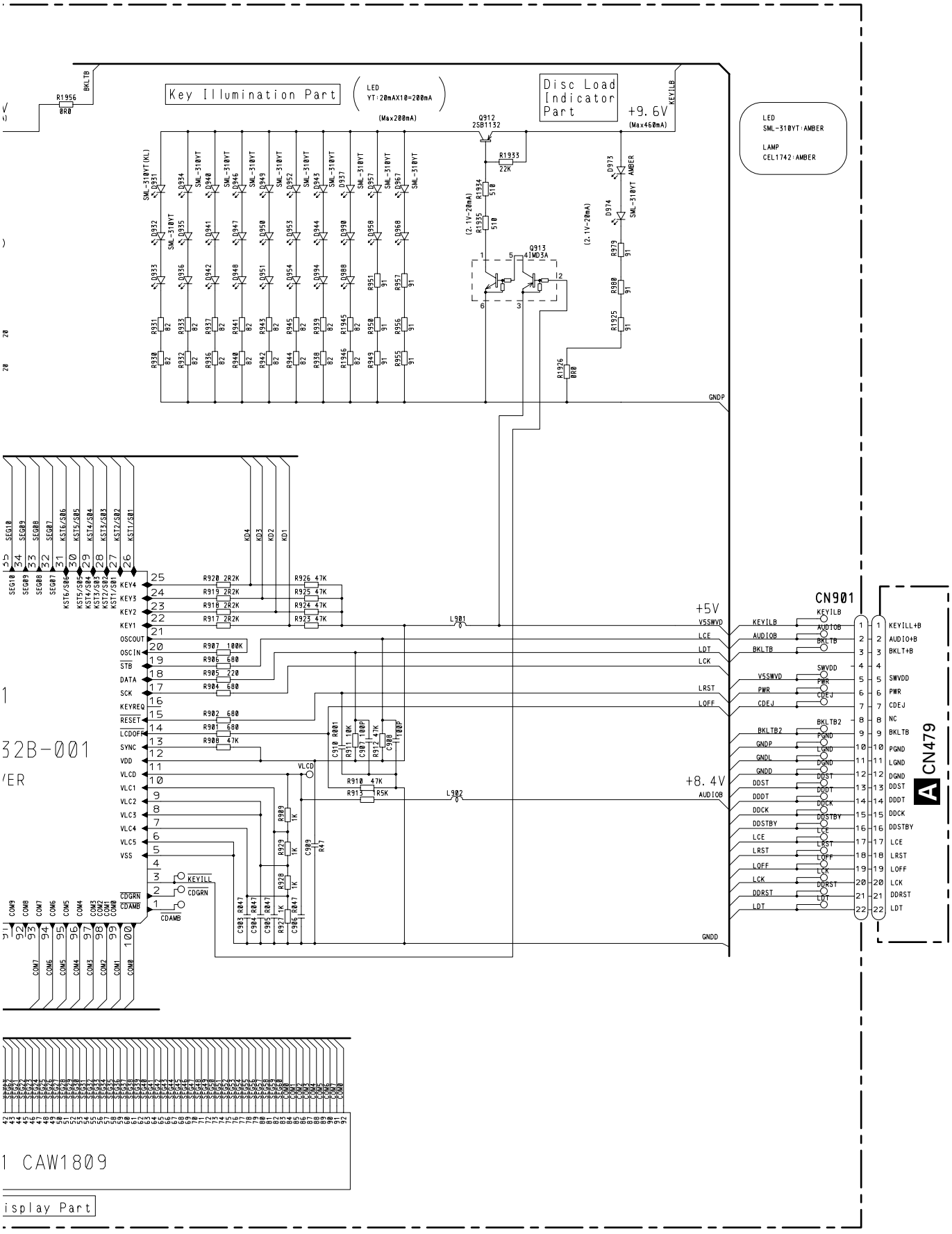
3
4


5V IC
IC421
S-812C56AUA-C5K
SWVDD
Q422
2SA1235A-12
5.0V
Q421
2SD1760F5
MPG06G-6415G50
IC782
S-80835CNNB-B8U
RESET IC
AVC-LAN
IC781
HA12187FP
BU SENSE
ACC SENSE
ILL SENSE
9.6V FOR KEY ILL
8.3V FOR CD
8.3V FOR AUDIO+B
WF AMP+B
ANT+B
ILL-
5.5V FOR VD2
8.4V FOR BKLTB LAMP
NOTE :
Symbol indicates a resistor.
No differentiation is made between chip resistors and discrete resistors.
Symbol indicates a capacitor.
No differentiation is made between chip capacitors and discrete capacitors.
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part.
Therefore, when replacing, be sure to use parts of identical designation.
Decimal points for resisto and capacitor fixed value are expressed as :
2.2→2R2
0.022→R022

3.3 KEYBOARD UNIT

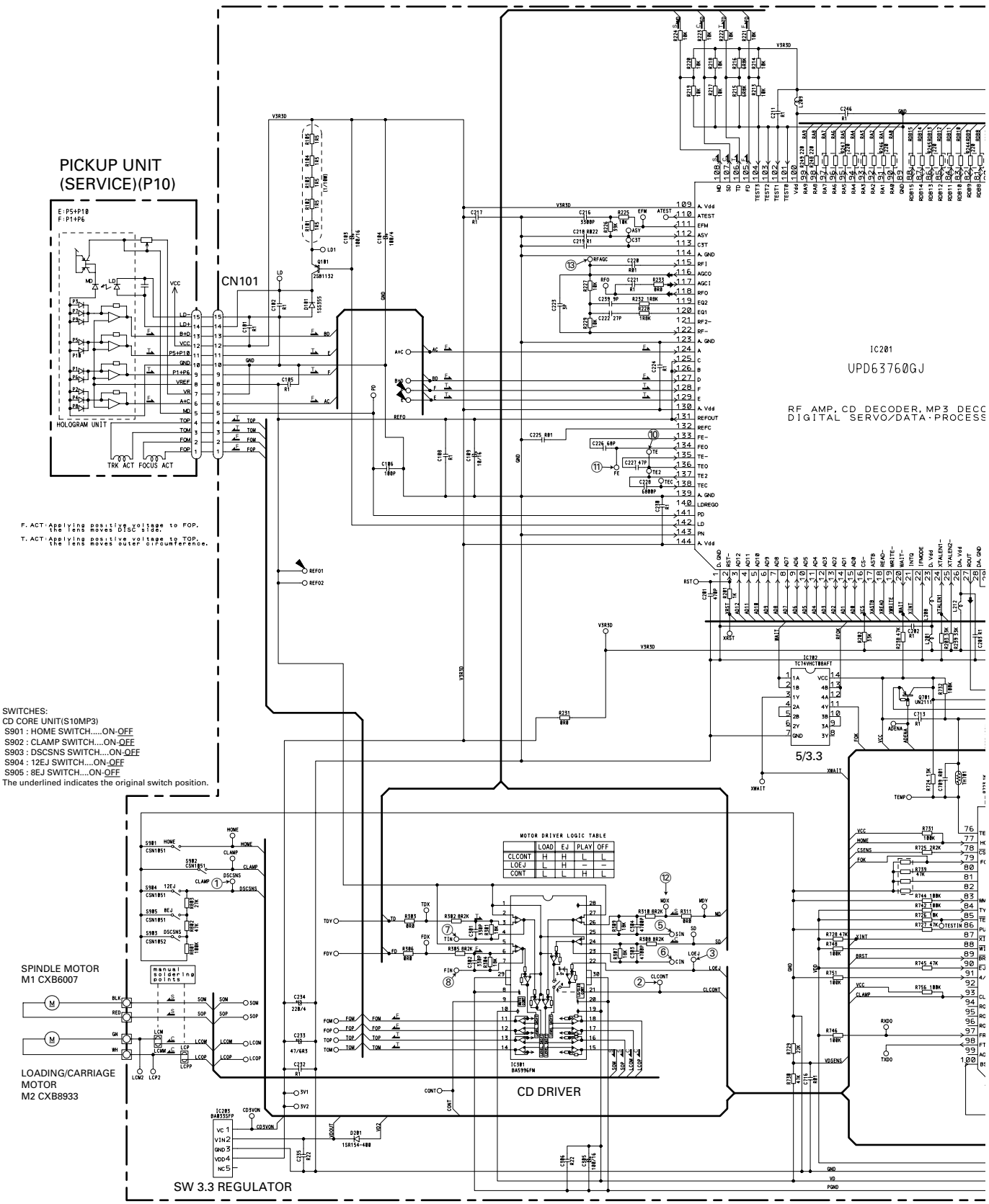
B KEYBOARD UNIT




Key Illumination Part
LED
YT:20mAX10=200mA
(Max200mA)
Disc Load
Indicator
Part
+9.6V
(Max460mA)
KEYILB
LED
SML-310YT:AMBER
LAMP
CEL1742:AMBER
BKLTB
R1956
0R0
Q912
2SB1132
R1933
22K
D973
AMBER
SML-310YT(KL)
SML-310YT
R1934
510
R1935
510
(2.1V-20mA)
Q913
4IMD3A
R979
91
R980
91
R1925
91
R1926
0R0
GNDP
KEY4
KEY3
KEY2
KEY1
OSCOUT
OSCIN
STB
DATA
SCK
KEYREQ
RESET
LCDOFF
SYNC
VDD
VLCD
VLC1
VLC2
VLC3
VLC4
VLC5
VSS
KEYILL
CDGRN
CDAMB
R920 2R2K
R919 2R2K
R918 2R2K
R917 2R2K
R926 47K
R925 47K
R924 47K
R923 47K
R907 100K
R906 680
R905 220
R904 680
R902 680
R901 680
R908 47K
R910 47K
R913 R5K
R909 1K
R929 1K
R928 1K
R927 1K
C910 R001
R911 10K
C907 100P
R912 47K
C908 100P
C909 R47
C903 R047
C904 R047
C905 R047
C906 R047
L901
L902
+5V
+8.4V
V5SWVD
LCE
LDT
LCK
LRST
LOFF
CDEJ
AUDIOB
BKLTB2
PGND
LGND
DGND
DDST
DDDT
DDCK
DDSTBY
DDRST
GNDD
CN901
CN479
KEYILL+B
AUDIO+B
BKLT+B
SWVDD
PWR
CDEJ
NC
BKLTB
PGND
LGND
DGND
DDST
DDDT
DDCK
DDSTBY
LCE
LRST
LOFF
LCK
DDRST
LDT
CAW1809
isplay Part

3.4 CD MECHANISM MODULE(GUIDE PAGE)

C-a

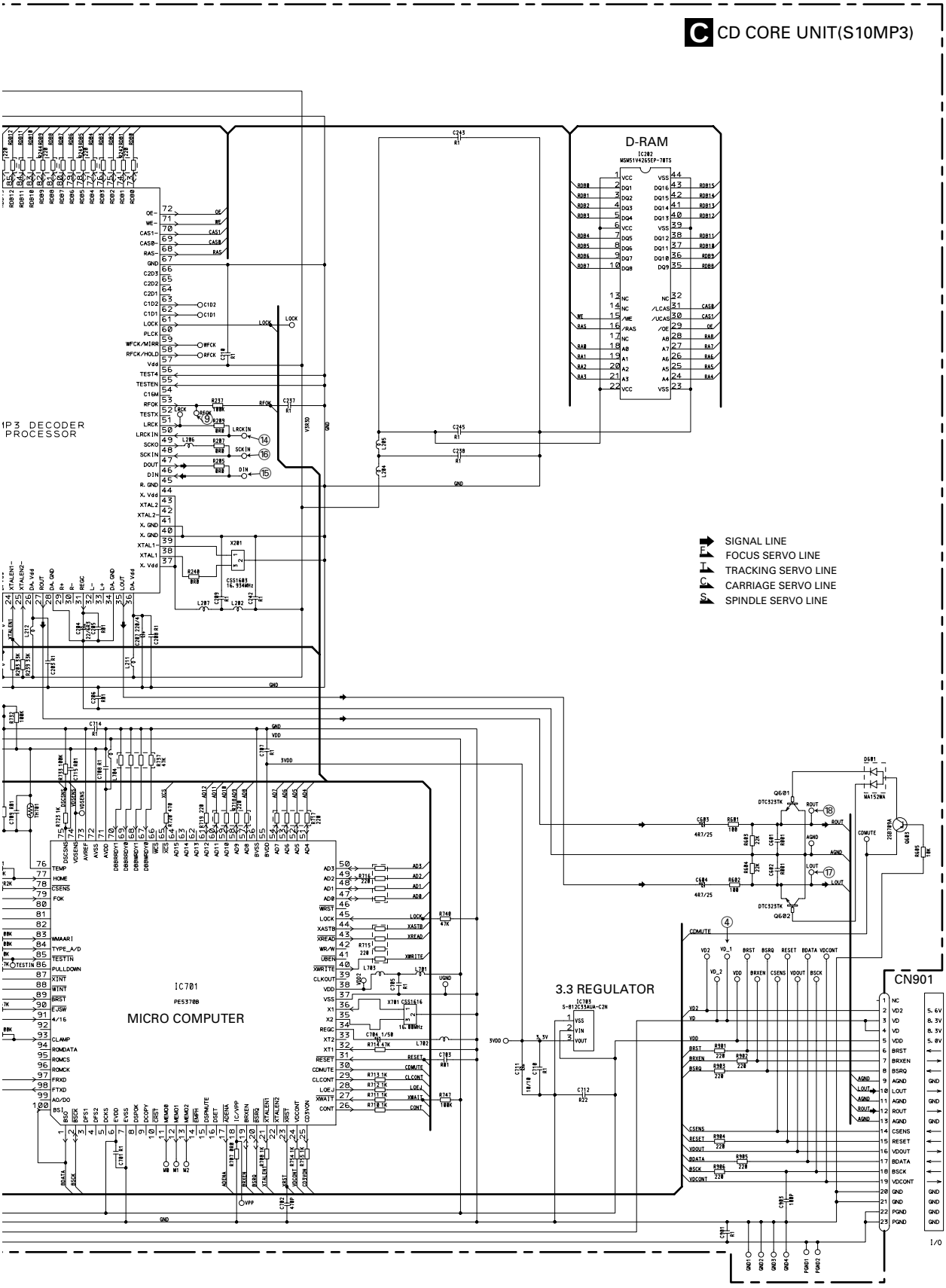


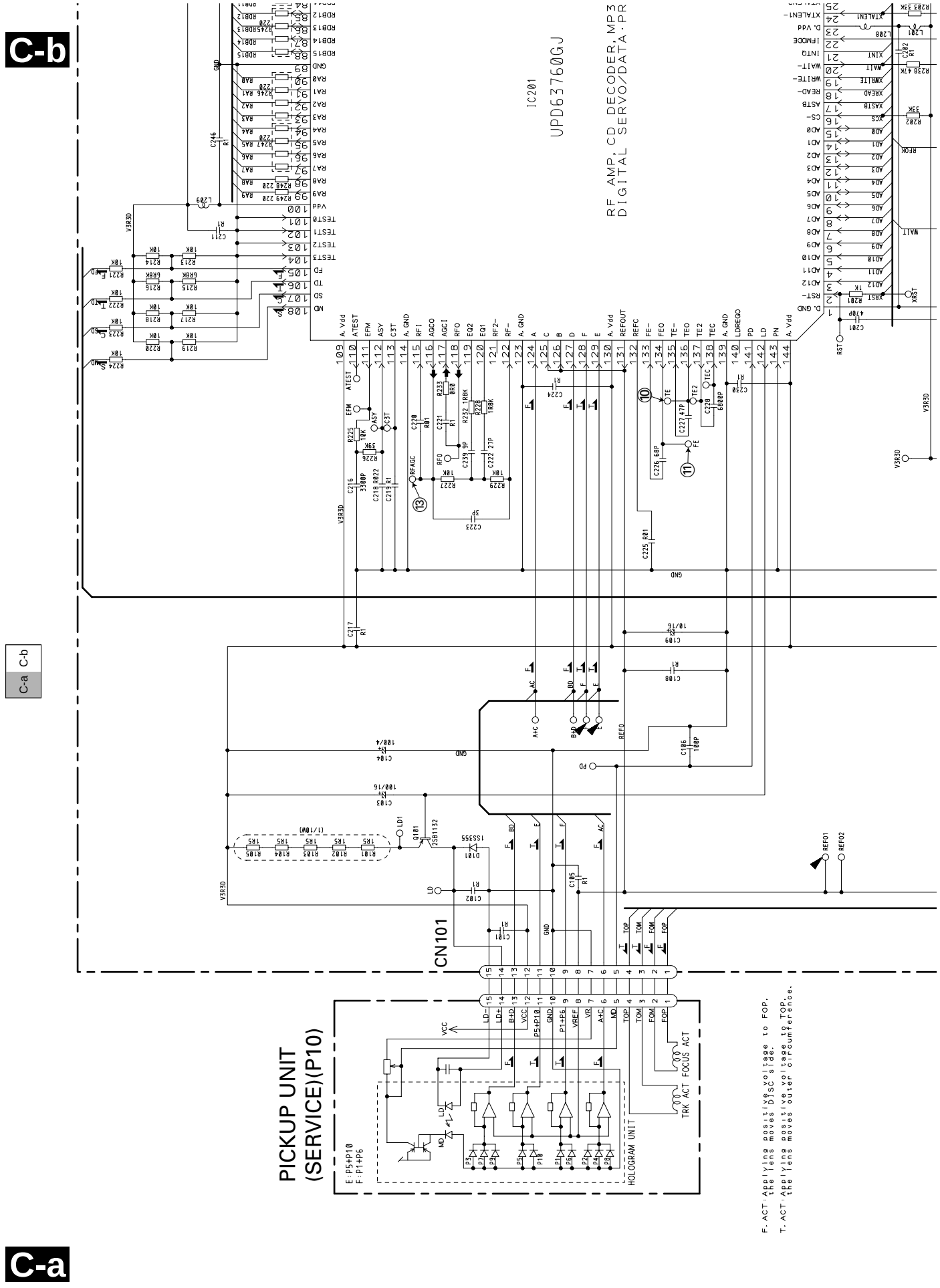
Monitor land(ø1.2mm)
#:Monitor land(ø0.8mm)
Land for manual soldering

NOTE1) GND ...CD LSI, RFAMP, CPU
PGND ...Actuator, Motor Driver
AGND ...Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating mechanism part by a screw.

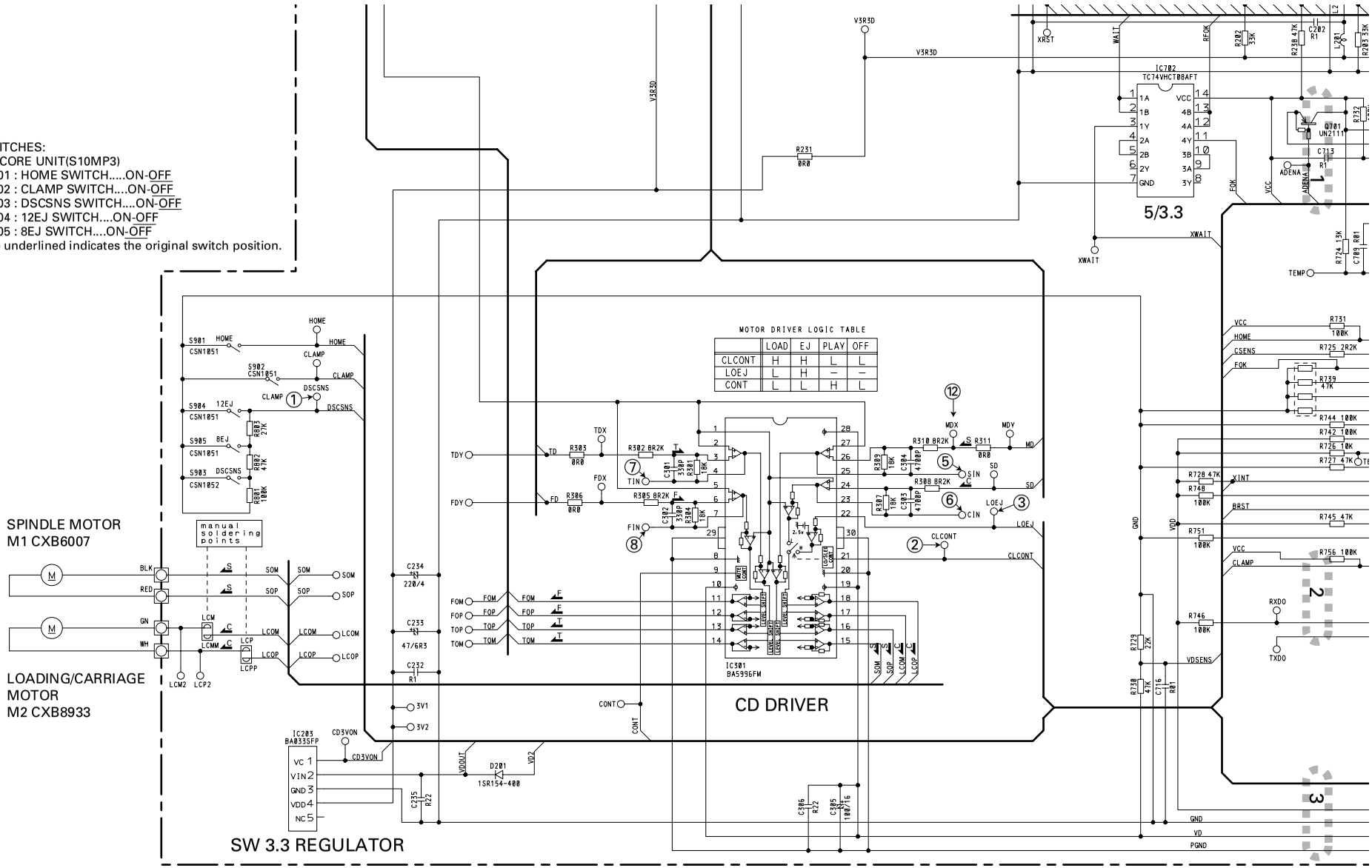
C-b

C CD CORE UNIT(S10MP3)




C-b
C-a
IC201
UPD63760GJ
RF AMP, CD DECODER, MP3
DIGITAL SERVO/DATA·PR
CN101
PICKUP UNIT
(SERVICE)(P10)
E: P5+P10
F: P1+P6
HOLOGRAM UNIT
TRK ACT FOCUS ACT
F. ACT: Applying positive voltage to FOP.
The lens moves disc side.
T. ACT: Applying positive voltage to TOP.
The lens moves outer circumference.

SWITCHES:
CD CORE UNIT(S10MP3)
S901 : HOME SWITCH.....ON-OFF
S902 : CLAMP SWITCH....ON-OFF
S903 : DSCSNS SWITCH....ON-OFF
S904 : 12EJ SWITCH....ON-OFF
S905 : 8EJ SWITCH....ON-OFF
The underlined indicates the original switch position.



Ⓑ Monitor land(φ1.2mm)
#:Monitor land(φ0.8mm)
◯ Land for manual soldering

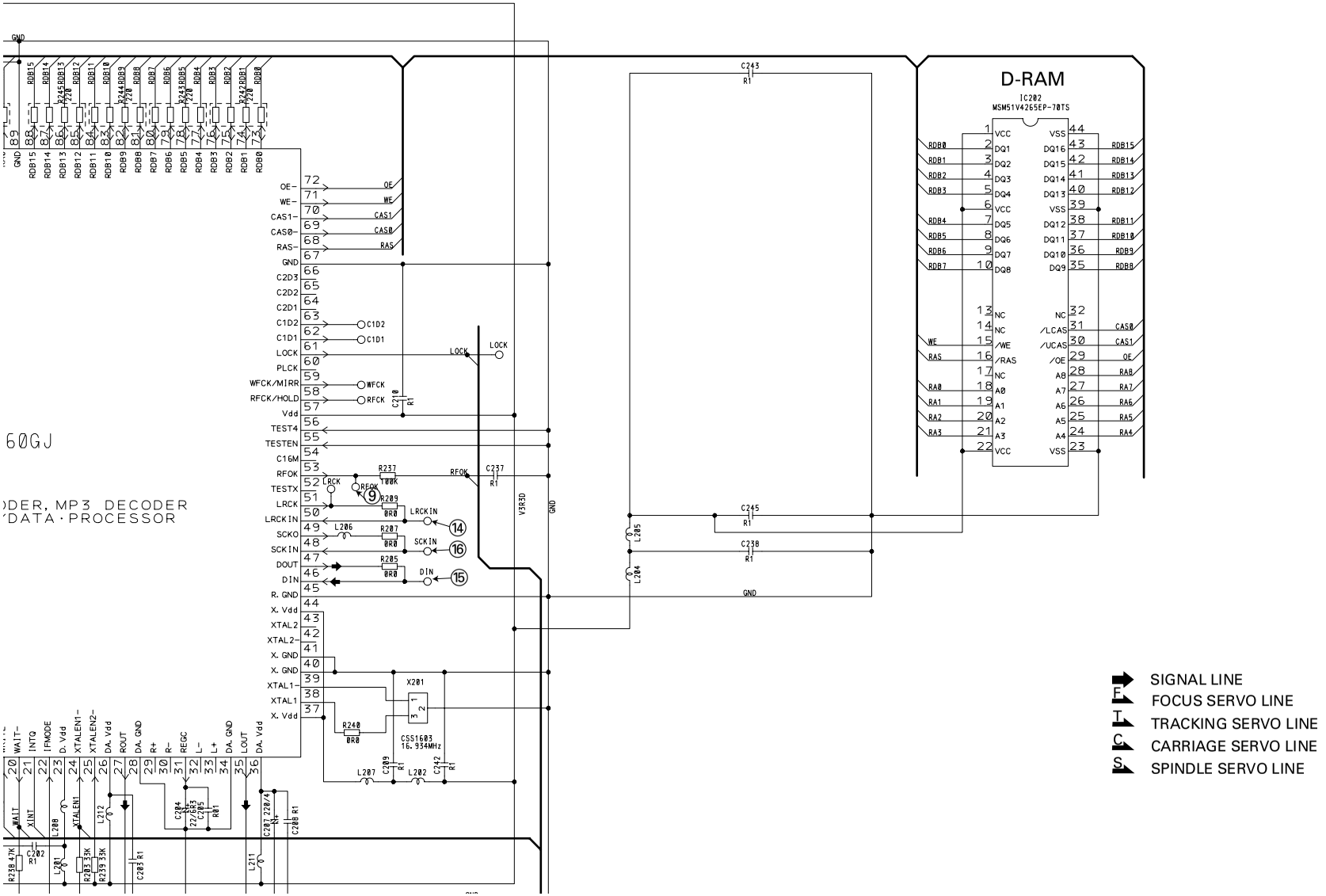
NOTE1) GND ...CD LSI、RFAMP、CPU
PGND ...Actuator, Motor Driver
AGND ···Audio
These GND's are not connected to each other on PCB.
PGND is connected to a floating mechanism part by a screw.

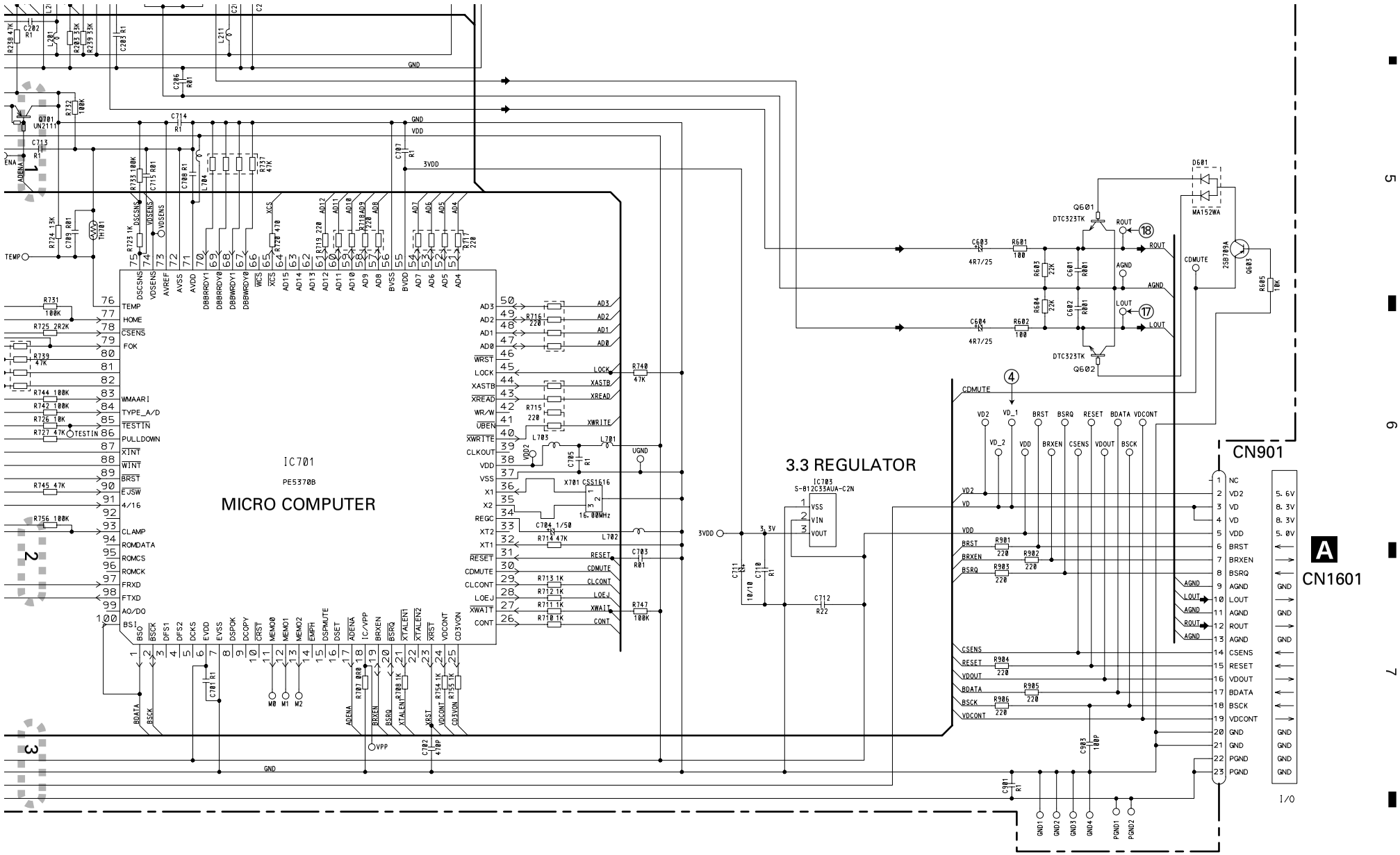
C-a C-b

C-a

C-b

C CD CORE UNIT(S10MP3)




IC701
PE5370B
MICRO COMPUTER
3.3 REGULATOR
IC705
S-812C33AUA-C2N
CN901
CN1601
Q601
DTC323TK
Q602
DTC323TK
D601
MA152WA
Q603
2SB709A
X701 CSS1616
16.00MHz
TEMP
HOME
CSENS
FOK
WMAARI
TYPE_A/D
TESTIN
PULLDOWN
XINT
WINT
BRST
EJSW
4/16
CLAMP
ROMDATA
ROMCS
ROMCK
FRXD
FTXD
AO/DO
BSI
RESET
CDMUTE
CLCONT
LOEJ
XWAIT
CONT
LOCK
XASTB
XREAD
WR/W
UBEN
XWRITE
CLKOUT
VDD
VSS
X1
X2
REGC
XT2
XT1
3VDD
UGND
VPP
GND
ROUT
LOUT
AGND
CDMUTE
VD2
VD_1
BRST
BSRQ
RESET
BDATA
VDCONT
VD_2
VDD
BRXEN
CSENS
VDOUT
BSCK
NC
VD2
VD
VD
VDD
BRST
BRXEN
BSRQ
AGND
LOUT
AGND
ROUT
AGND
CSENS
RESET
VDOUT
BDATA
BSCK
VDCONT
GND
GND
PGND
PGND
5. 6V
8. 3V
8. 0V
I/O
GND1
GND2
GND3
GND4
PGND1
PGND2

C-b

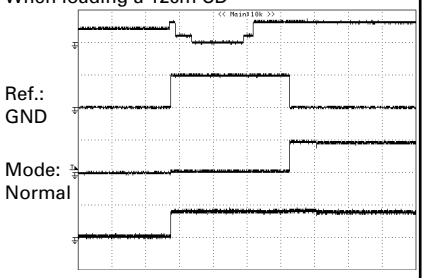
C-a C-b

● Waveforms

Note : 1. The encircled numbers denote measuring points in the circuit diagram.
2. Reference voltage REFO1(1.65V)

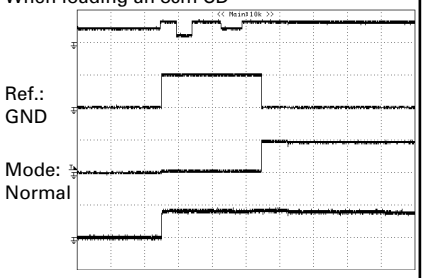
① DSCSNS 5V/div 500ms/div
② CLCONT 5V/div
③ LOEJ 5V/div
④ VD 10V/div

When loading a 12cm CD



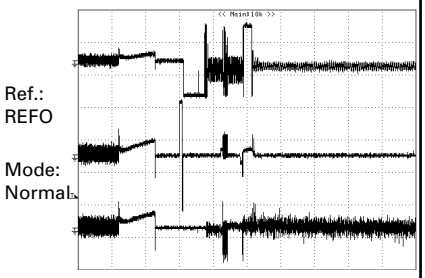
① DSCSNS 5V/div 500ms/div
② CLCONT 5V/div
③ LOEJ 5V/div
④ VD 10V/div

When loading an 8cm CD



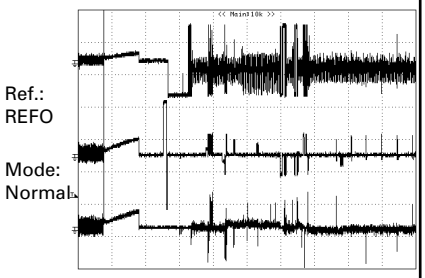
⑤ SIN 1V/div 2s/div
⑥ CIN 500mV/div
⑦ TIN 500mV/div

When setting up after loading a 12cm CD-DA disc



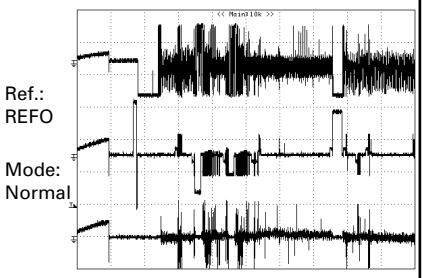
⑤ SIN 1V/div 2s/div
⑥ CIN 500mV/div
⑦ TIN 500mV/div

When setting up after loading a 12cm CD-ROM disc(1 session)



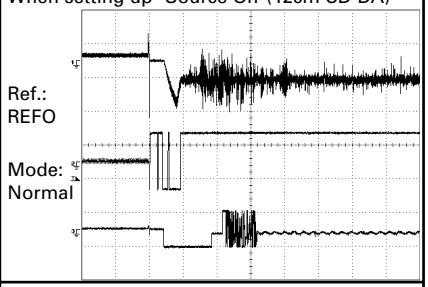
⑤ SIN 1V/div 2s/div
⑥ CIN 500mV/div
⑦ TIN 500mV/div

When setting up after loading a 12cm CD-ROM disc(3 session)



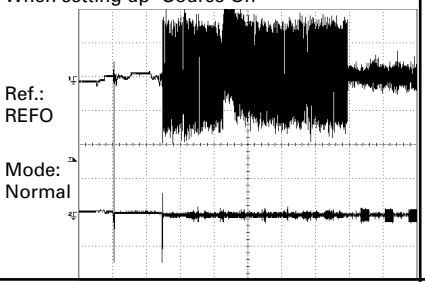
⑧ FIN 200mV/div 500ms/div
⑨ RFOK 2V/div
⑤ SIN 2V/div

When setting up "Source On"(12cm CD-DA)



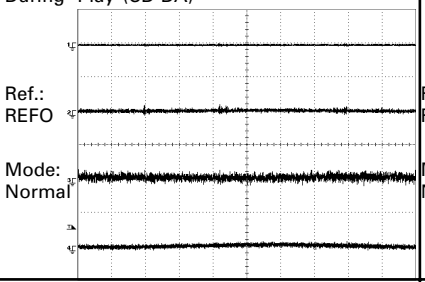
⑩ TE 500mV/div 200ms/div
⑪ FE 500mV/div

When setting up "Source On"



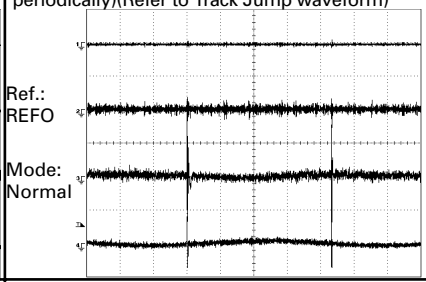
⑪ FE 500mV/div 20ms/div
⑧ FIN 500mV/div
⑩ TE 500mV/div
⑦ TIN 500mV/div

During "Play"(CD-DA)



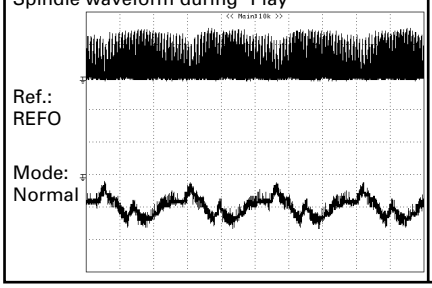
⑪ FE 500mV/div 20ms/div
⑧ FIN 500mV/div
⑩ TE 500mV/div
⑦ TIN 500mV/div

During "Play"(CD-ROM)(Track Jump is generated periodically)(Refer to Track Jump waveform)



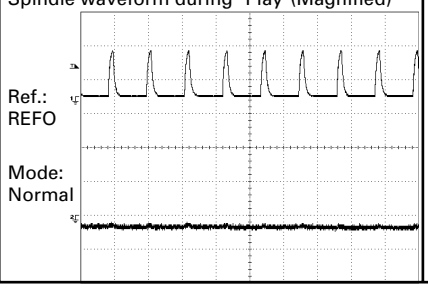
⑫ MDX 500mV/div 50ms/div
⑤ SIN 200mV/div

Spindle waveform during "Play"



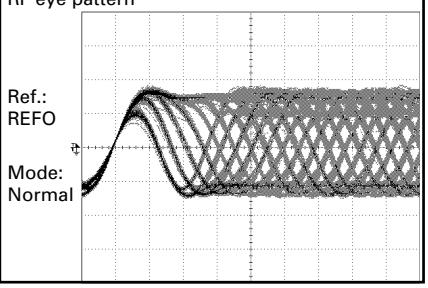
⑫ MDX 500mV/div 5µs/div
⑤ SIN 1V/div

Spindle waveform during "Play"(Magnified)



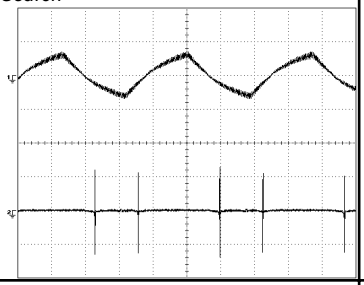
⑬ RFAGC 500mV/div 5µs/div

RF eye pattern



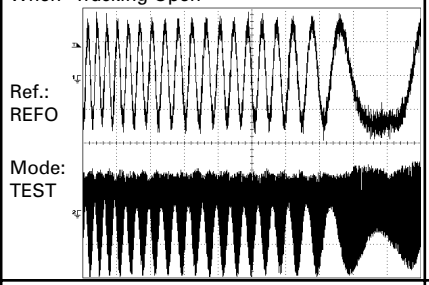
⑧ FIN 500mV/div 200ms/div
⑪ FE 500mV/div

Focus Search



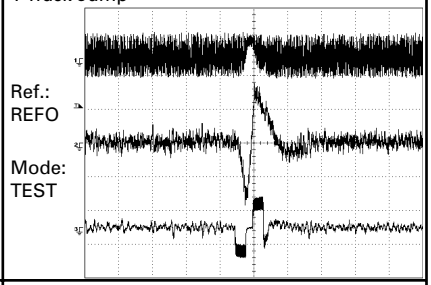
⑩ TE 500mV/div 2ms/div
⑬ RFAGC 500mV/div

When "Tracking Open"



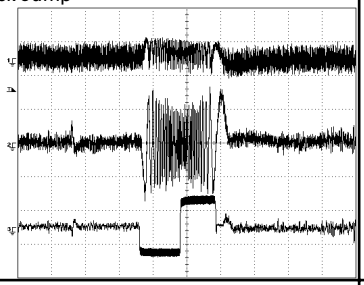
⑬ RFAGC 1V/div 500µs/div
⑩ TE 500mV/div
⑦ TIN 500mV/div

1 Track Jump



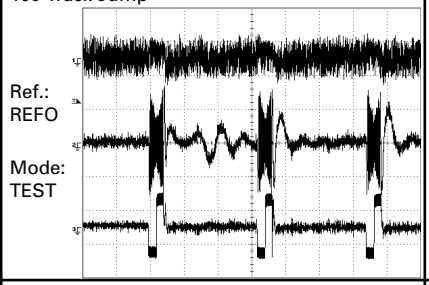
⑬ RFAGC 1V/div 1ms/div
⑩ TE 500mV/div
⑦ TIN 500mV/div

32 Track Jump



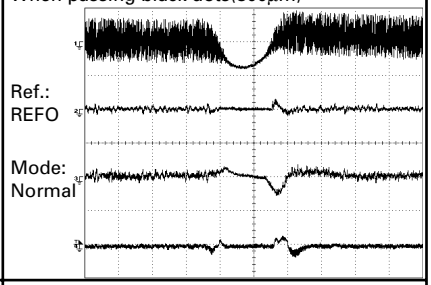
⑬ RFAGC 1V/div 5ms/div
⑩ TE 500mV/div
⑦ TIN 500mV/div

100 Track Jump



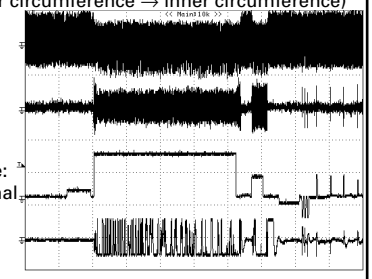
⑬ RFAGC 1V/div 500µs/div
⑦ TIN 1V/div
⑩ TE 1V/div
⑧ FIN 1V/div

When passing black dots(800µm)



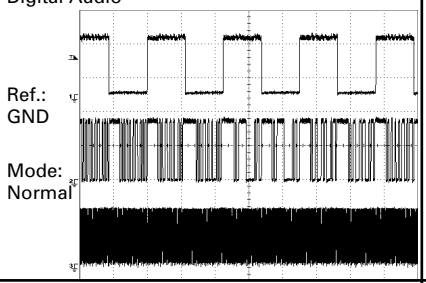
⑬ RFAGC 1V/div 200ms/div
⑩ TE 1V/div
⑥ CIN 500mV/div
⑤ SIN 2V/div

During inside/outside search
(outer circumference → inner circumference)



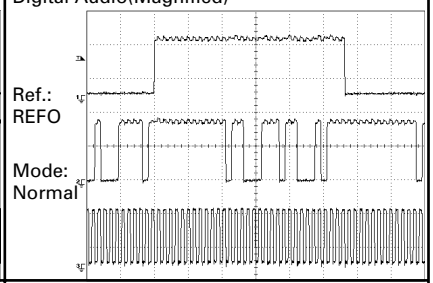
⑭ LRCKIN 2V/div 10µs/div
⑮ DIN 2V/div
⑯ SCKIN 2V/div

Digital Audio



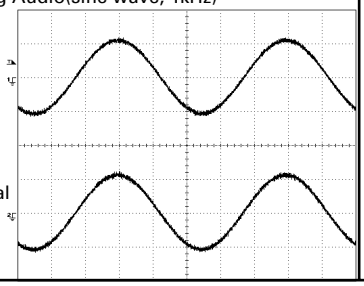
⑭ LRCKIN 2V/div 2µs/div
⑮ DIN 2V/div
⑯ SCKIN 2V/div

Digital Audio(Magnified)



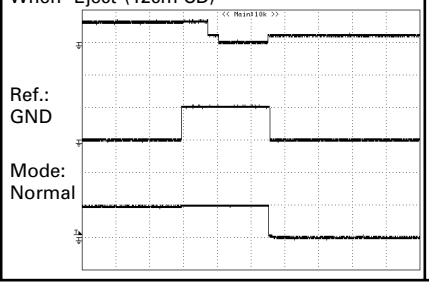
⑰ LOUT 1V/div 200µs/div
⑱ ROUT 1V/div

Analog Audio(sine wave, 1kHz)



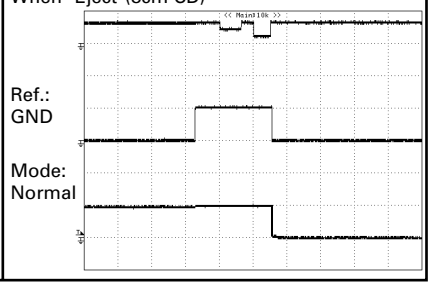
① DSCSNS 5V/div 500ms/div
② CLCONT 5V/div
③ LOEJ 5V/div

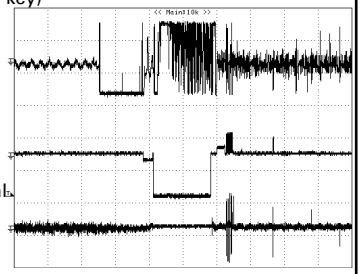
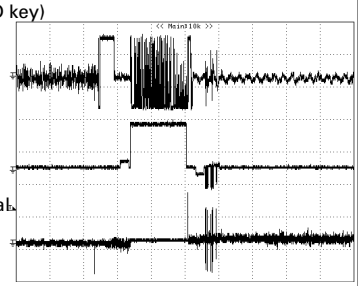
When "Eject"(12cm CD)



① DSCSNS 5V/div 10µs/div
② CLCONT 5V/div
③ LOEJ 5V/div

When "Eject"(8cm CD)



⑤ SIN 1V/div 500ms/div ⑥ CIN 500mV/div ⑦ TIN 500mV/div When switching to CD-ROM from CD-DA (BAND key) Ref.: REFO Mode: Normal 	⑤ SIN 1V/div 500ms/div ⑥ CIN 500mV/div ⑦ TIN 500mV/div When switching to CD-DA from CD-ROM (BAND key) Ref.: REFO Mode: Normal 	

A

B

C

D

E

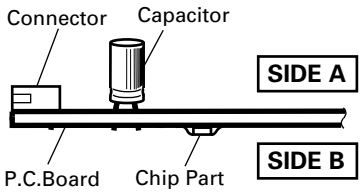
F

4. PCB CONNECTION DIAGRAM

4.1 MAIN UNIT

NOTE FOR PCB DIAGRAMS

1. The parts mounted on this PCB include all necessary parts for several destination.
   For further information for respective destinations, be sure to check with the schematic diagram.
2. Viewpoint of PCB diagrams



A MAIN UNIT

IC, Q

IC801

Q850

Q431

Q451
Q457 Q404
Q805

Q441 Q456 Q458 Q804
Q803 Q402
Q455
Q807 Q403 Q452
Q421
Q808
IC421
Q802 Q454 Q453
IC331
Q422 Q801

IC781 IC302 IC301
Q351 Q563

Q307 Q565
Q702 Q564
Q701 IC501

Q562

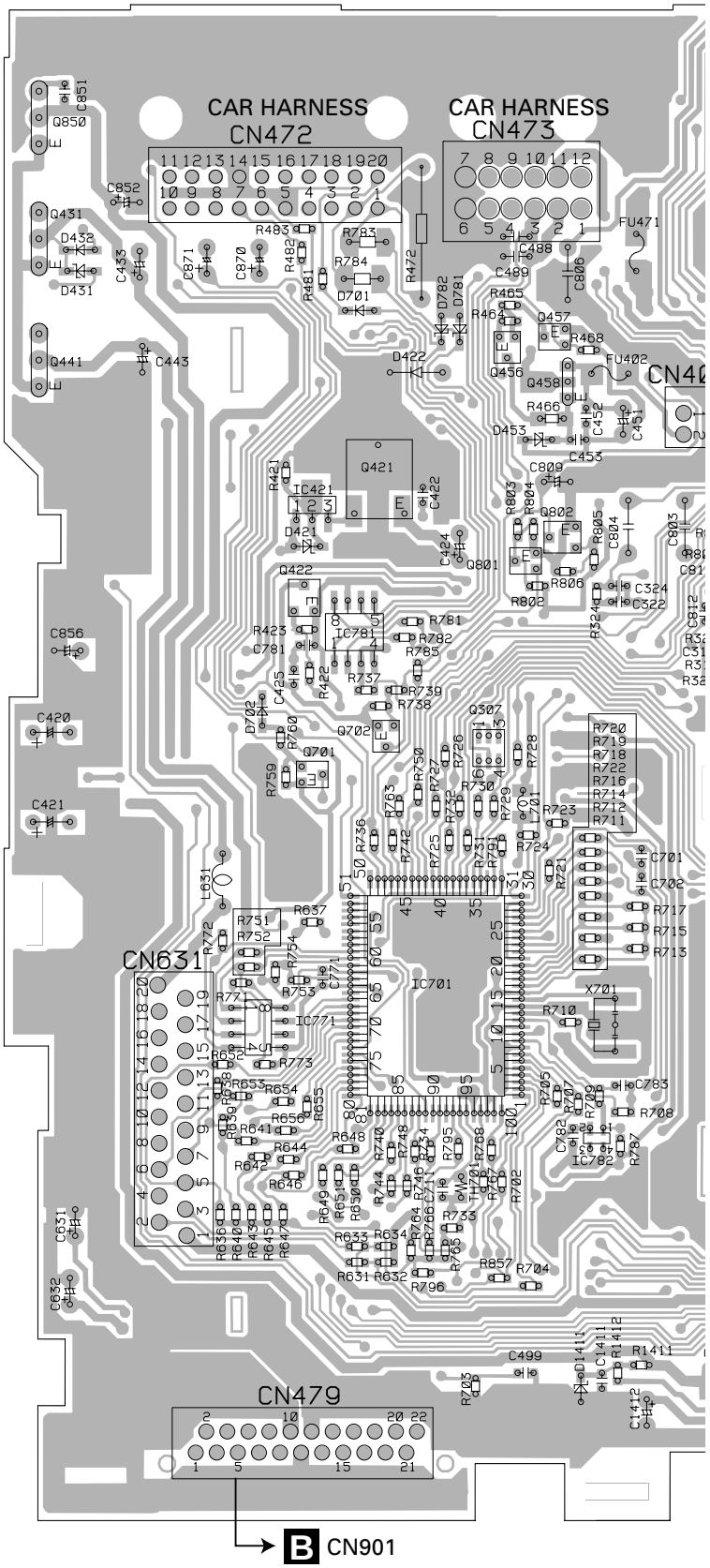
IC562
Q501

IC701
IC771
IC351

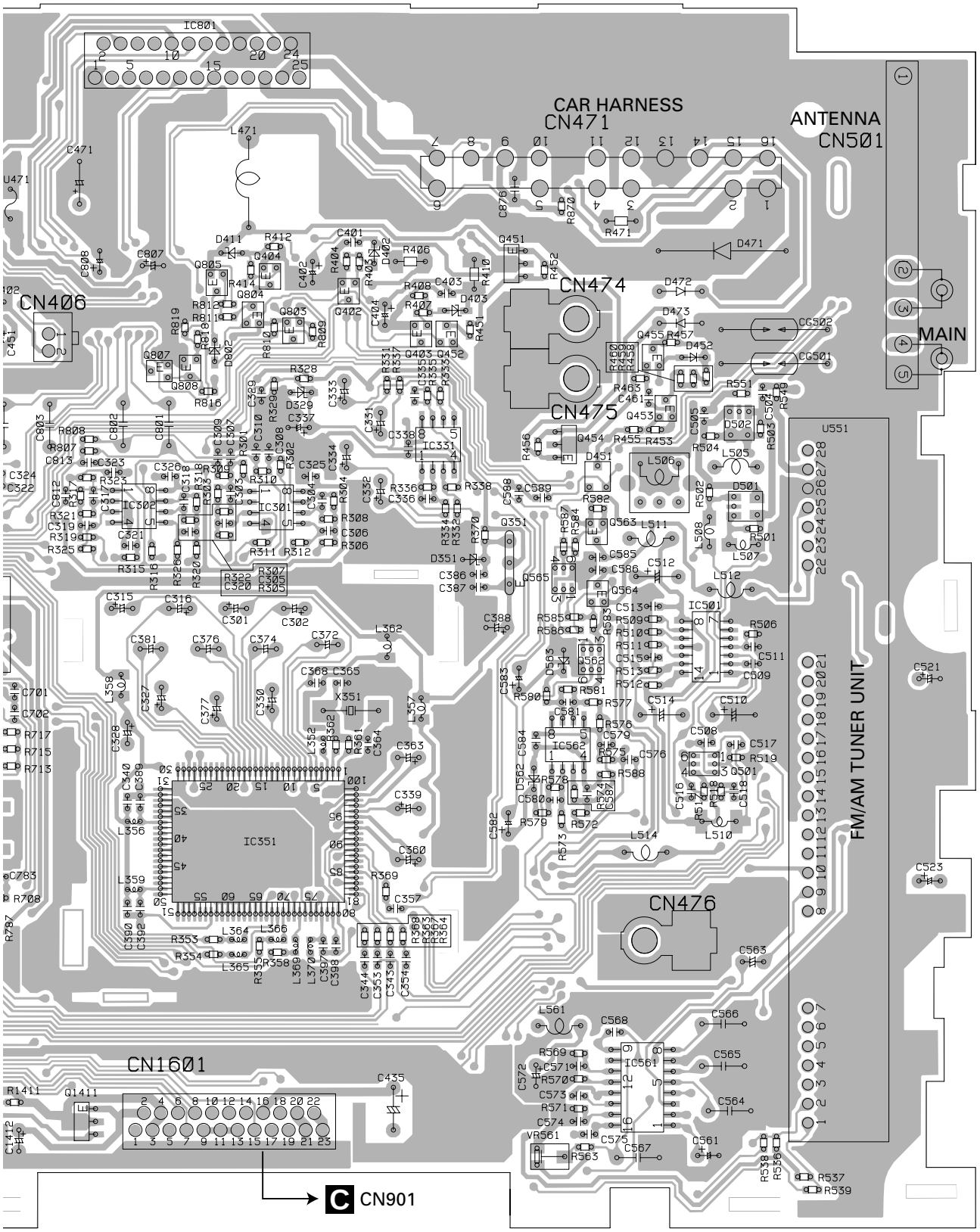
IC782

IC561

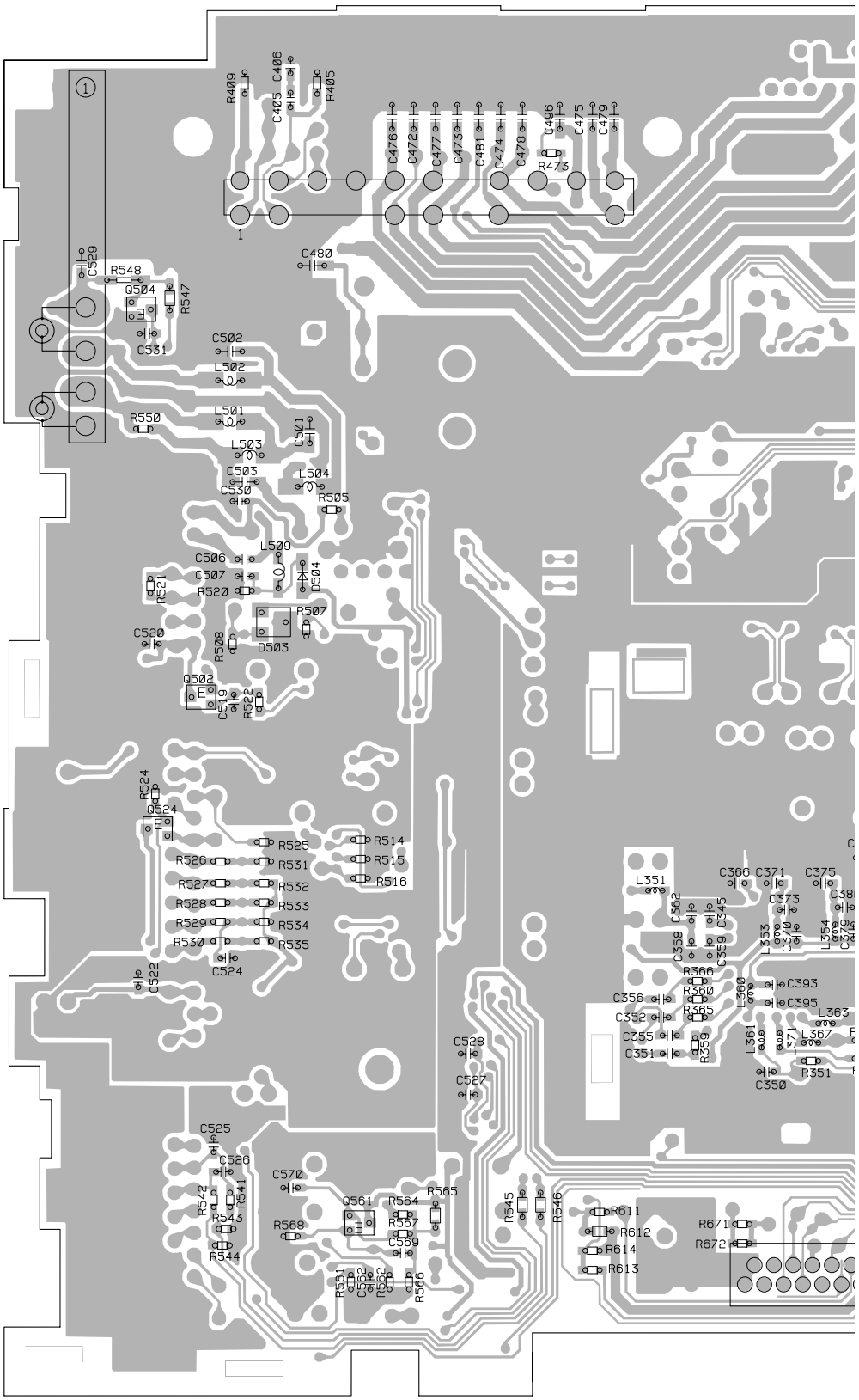
Q1411



SIDE A

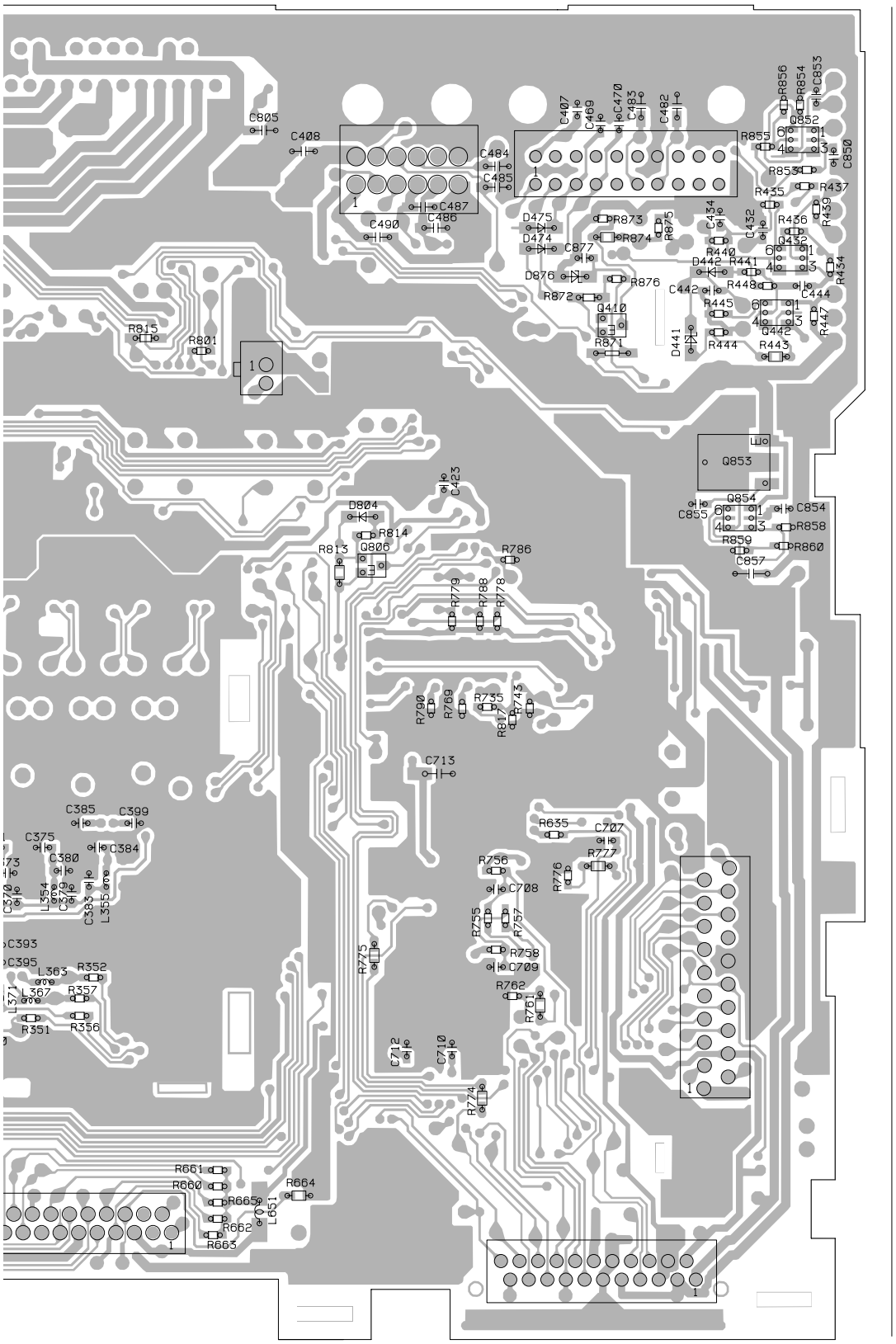

CAR HARNESS
CN471
ANTENNA
CN501
CN406
CN474
CN475
CN476
MAIN
CG502
CG501
CN1601
IC801
IC351
IC301
IC302
IC331
IC501
IC561
IC562
U551
FM/AM TUNER UNIT
C CN901
FRONT

A MAIN UNIT


R409
C403
C406
R405
C476
C472
C477
C473
C481
C474
C478
R473
C496
C475
C479
C529
R548
Q504
R547
C531
C480
C502
L502
L501
R550
L503
C501
C503
L504
C530
R505
L509
C506
C507
R520
R521
D504
R507
C520
R508
D503
Q503
C519
R522
R524
Q524
R525
R526
R527
R528
R529
R530
R531
R532
R533
R534
R535
C524
C522
R514
R515
R516
C528
C527
C525
C526
R542
R541
R543
R544
C570
R568
Q561
R564
R567
R565
C569
R561
C562
R562
R566
R545
R546
R611
R612
R614
R613
R671
R672
L351
C366
C371
C375
C362
C373
C345
C358
C359
C370
L354
L360
C393
C356
R360
C395
C352
R365
L383
C355
R359
L361
L377
L367
C351
R351
C350

A

SIDE B

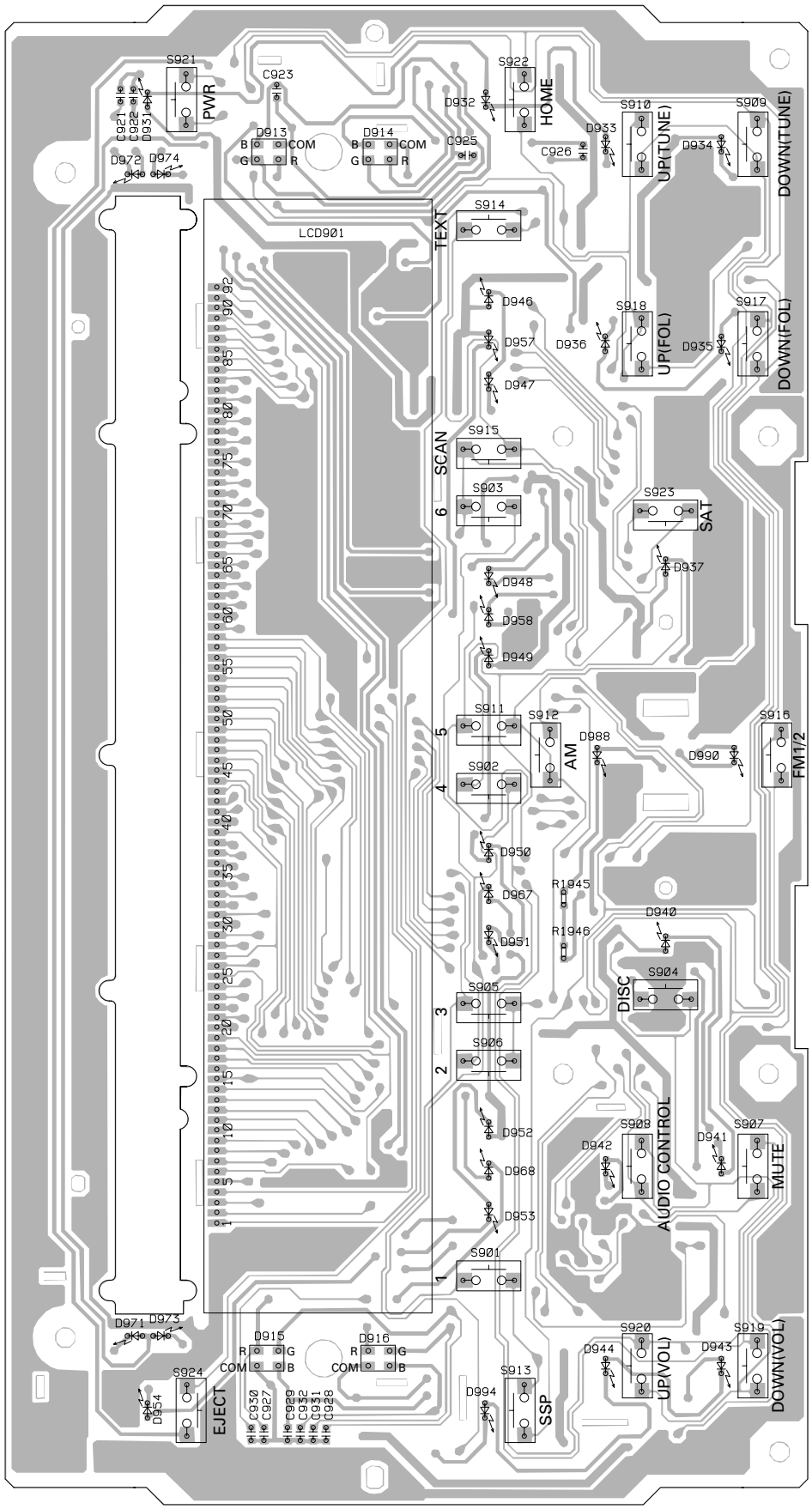

IC, Q
Q852
Q432
Q504
Q410
Q442
Q853
Q854
Q806
Q502
Q524
Q561
C805
C408
C484
C485
C487
C486
C490
C407
C469
C470
C483
C482
R856
R854
C853
C850
R855
R853
R435
R437
R439
R436
C434
C432
R440
R442
R441
R448
R445
R444
R443
C444
C441
R447
R434
D475
D474
D876
C877
R873
R874
R875
R876
R872
Q410
R871
D441
C442
R815
R801
C423
D804
R814
R813
Q806
R786
R779
R788
R778
R790
R769
R735
R817
R743
C713
C385
C399
C375
C384
C380
C393
C395
L363
R352
L367
R357
R351
R356
C712
C710
R635
C707
R777
R776
R756
C708
R755
R757
R758
C709
R762
R761
R775
R774
R661
R660
R664
R665
R662
R663
L651
Q853
Q854
C855
C854
R858
R859
R860
C857

A

4.2 KEYBOARD UNIT

B KEYBOARD UNIT

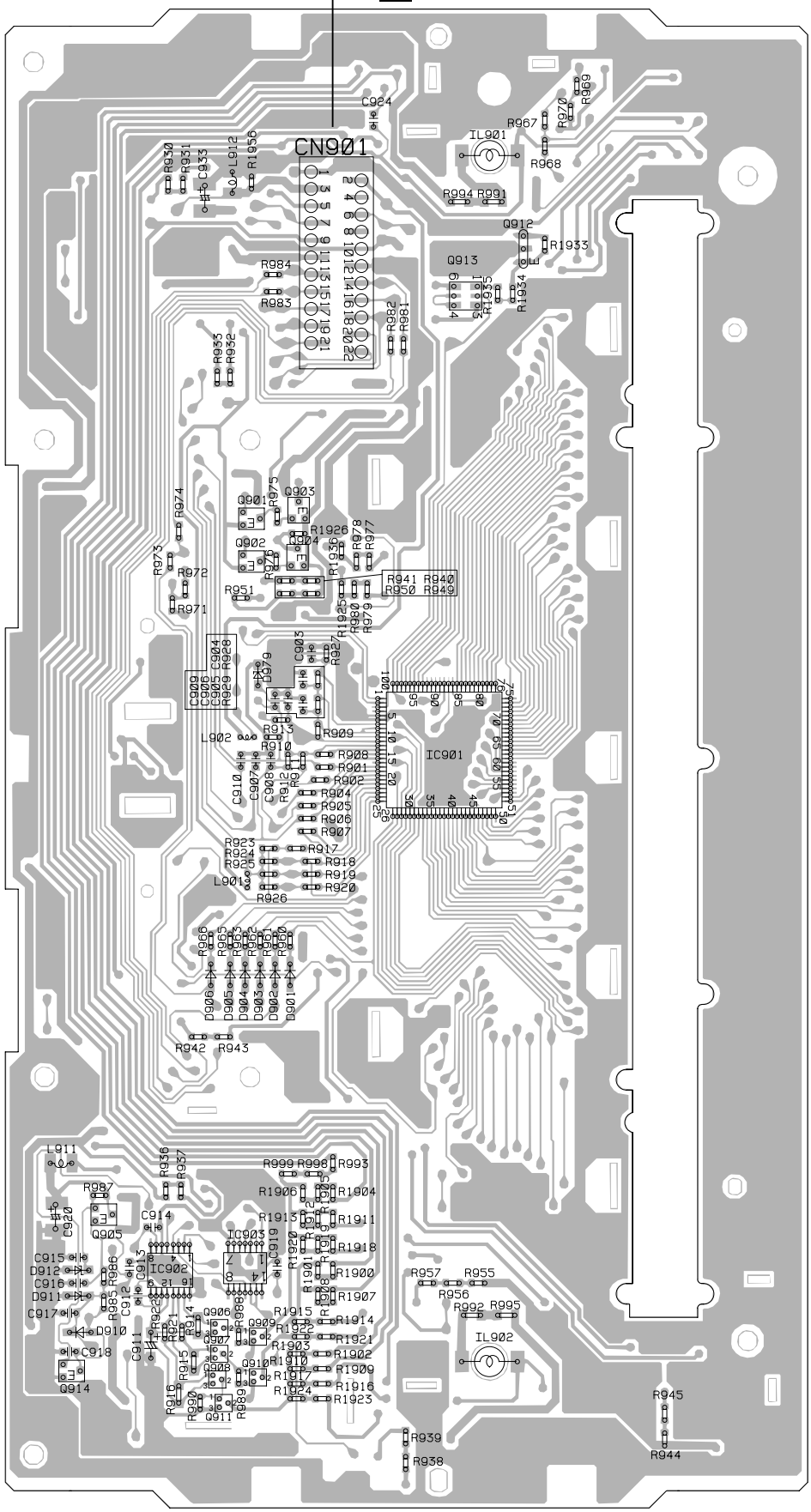
SIDE A



B KEYBOARD UNIT

SIDE B

A CN479



IC, Q

Q912

Q913

Q901 Q903

Q904
Q902

IC901

Q905 IC903

IC902

Q906 Q909

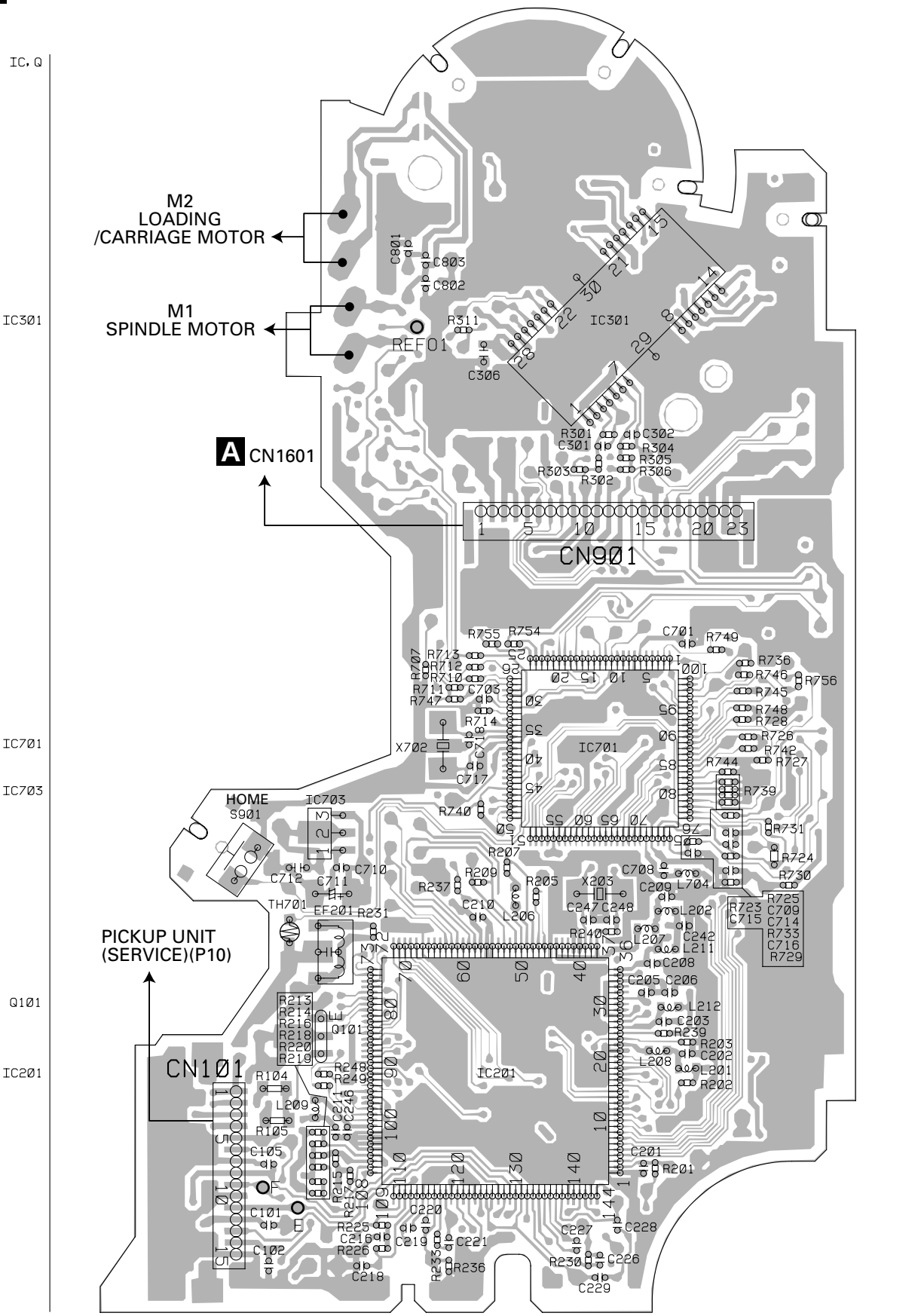
Q907
Q908 Q910
Q914

Q911

4.3 CD MECHANISM MODULE

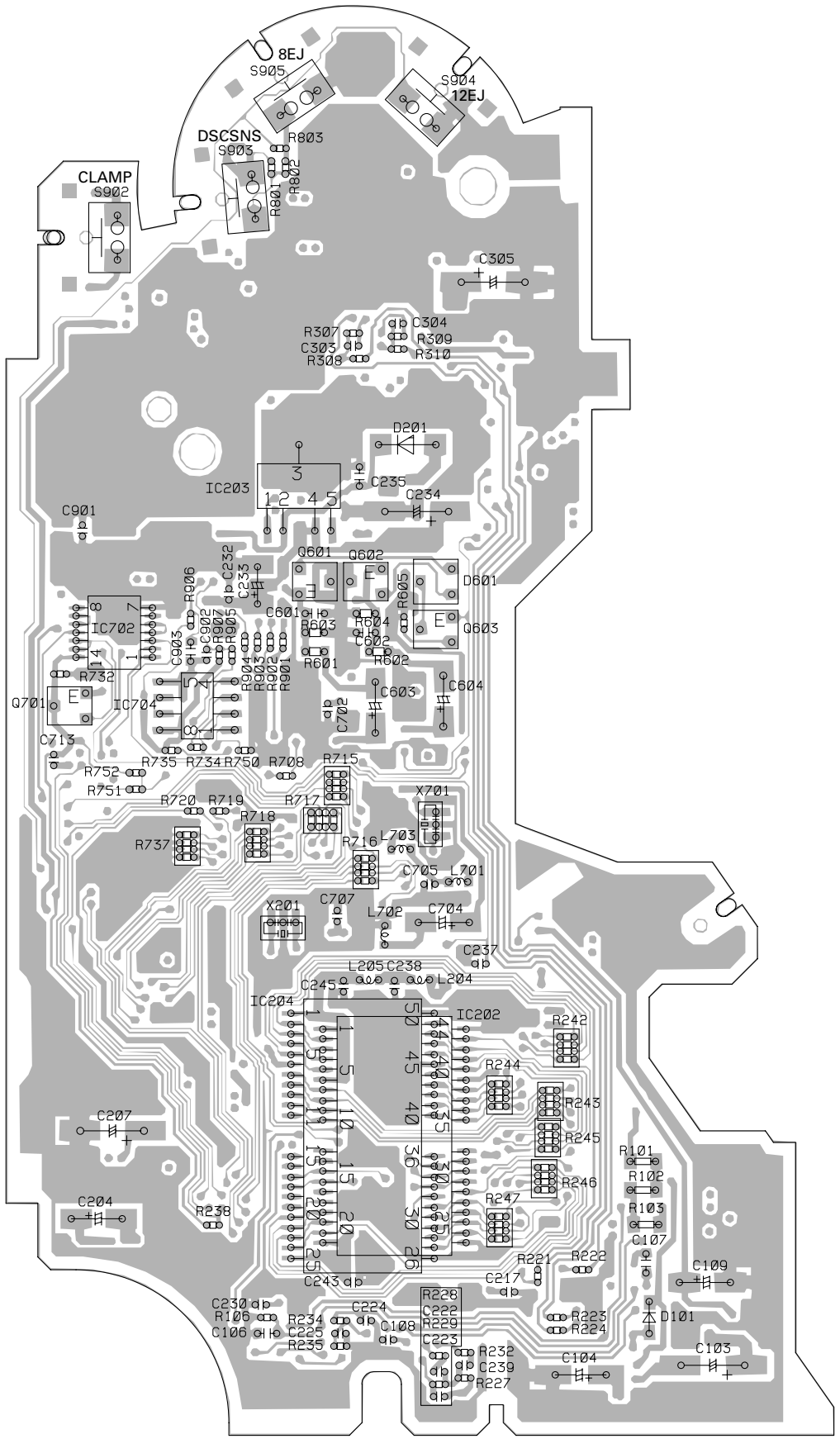
C CD CORE UNIT(S10MP3)

SIDE A



C CD CORE UNIT(S10MP3)

SIDE B



IC, Q

IC203

Q601

Q602

IC702

Q603

Q701

IC704

IC204

IC202

5. ELECTRICAL PARTS LIST

NOTES:

- Parts whose parts numbers are omitted are subject to being not supplied.
- The part numbers shown below indicate chip components.

Chip Resistor

RS1/○S○○○J,RS1/○○S○○○J

Chip Capacitor (except for CQS.....)

CKS....., CCS....., CSZS.....

A Unit Number : CWM8737
Unit Name : Main Unit

MISCELLANEOUS

=====Circuit Symbol and No.		===Part Name	Part No.
IC	331	IC	NJM4558MD
IC	351	IC	PM2010A
IC	421	IC	S-812C56AUA-C3K
IC	561	IC	HA12181FP
IC	701	IC	PD5861A
IC	781	IC	HA12187FP
IC	782	IC	S-80835CNNB-B8U
IC	801	IC	TDA7386
Q	351	Transistor	2SD1859
Q	402	Transistor	2SC4081
Q	403	Transistor	2SC4081
Q	404	Transistor	2SC4081
Q	410	Transistor	2SA1576
Q	421	Transistor	2SD1760F5
Q	422	Transistor	2SA1235A-12
Q	431	Transistor	2SB1185
Q	432	Transistor	IMX1
Q	441	Transistor	2SB1185
Q	442	Transistor	IMX1
Q	451	Transistor	2SB1260
Q	452	Transistor	DTC124EU
Q	453	Transistor	2SC4081
Q	454	Transistor	2SB1260
Q	455	Transistor	2SC4081
Q	502	Transistor	2SC4081
Q	524	Transistor	DTC143TU
Q	561	Transistor	2SC4081
Q	563	Transistor	2SA1576
Q	565	Transistor	IMX1
Q	701	Transistor	2SA1576
Q	801	Transistor	DTC143EU
Q	802	Transistor	2SD1781K
Q	803	Transistor	2SC4081
Q	804	Transistor	DTC143EU
Q	805	Transistor	2SA1576
Q	806	Transistor	2SA1576
Q	807	Transistor	2SC4081
Q	808	Transistor	2SC4081
Q	850	Transistor	2SB1185
Q	852	Transistor	IMX1
Q	853	Transistor	2SB1184F5
Q	854	Transistor	IMX1
Q	1411	Transistor	2SD1664
D	351	Diode	HZU3R9(B2)
D	402	Diode	HZU8R2(B1)
D	403	Diode	HZU8R2(B1)
D	411	Diode	RD8R2SL(N1)
D	421	Diode	UDZS16(B)
D	422	Diode	MPG06G-6415G50
D	431	Diode	HZU7R5(B3)
D	432	Diode	1SS355
D	441	Diode	HZU7R5(B3)
D	442	Diode	1SS355
D	451	Diode	DAN202K
D	452	Diode	1SS355
D	471	Diode	P300JL-6059
D	472	Diode	MPG06G-6415G50
D	473	Diode	MPG06G-6415G50
D	474	Diode	1SS355
D	475	Diode	1SS355
D	702	Diode	1SS355
D	781	Diode	UDZS18(B)
D	782	Diode	UDZS18(B)
D	802	Diode	HZU8R2(B3)
D	804	Diode	1SS355
D	876	Diode	UDZS5R6(B)
D	1411	Diode	HZU6R2(B2)
L	351	Inductor	CTF1379
L	352	Inductor	CTF1379
L	353	Inductor	CTF1379
L	354	Inductor	CTF1379
L	355	Inductor	CTF1379
L	356	Inductor	CTF1379
L	357	Inductor	LCTA2R2J2520
L	358	Inductor	LCTA2R2J2520
L	359	Inductor	CTF1379
L	360	Inductor	CTF1379
L	361	Inductor	CTF1379
L	362	Inductor	LCTA2R2J2520
L	363	Inductor	CTF1379
L	364	Inductor	CTF1379
L	365	Inductor	CTF1379
L	367	Inductor	CTF1379
L	369	Inductor	CTF1379
L	370	Inductor	CTF1379
L	371	Inductor	CTF1379
L	471	Choke Coil 600µH	CTH1221
L	505	Ferri-Inductor	LAU4R7K
L	512	Inductor	LAU1R0K
L	514	Inductor	LAU1R0K
L	561	Ferri-Inductor	LAU4R7K
L	651	Inductor	LCYA2R2J2520
L	701	Inductor	LCTA150J2520
CG	501	Surge Protector	DSP-201M-A21F
X	351	Radiator 33.8688MHz	CSS1600
X	701	Radiator 10.00MHz	CSS1428
FU	471	Fuse	CEK1263
		FM/AM Tuner Unit	CWE1630

RESISTORS

R	301		RS1/16S102J
R	302		RS1/16S102J
R	309		RS1/16S102J
R	310		RS1/16S102J
R	315		RS1/16S102J

Circuit Symbol and No.	Part Name	Part No.
R 316		RS1/16S102J
R 323		RS1/16S102J
R 324		RS1/16S102J
R 328		RS1/16S472J
R 329		RS1/16S472J
R 331		RS1/16S473J
R 332		RS1/16S473J
R 333		RS1/16S473J
R 334		RS1/16S473J
R 335		RS1/16S183J
R 336		RS1/16S183J
R 337		RS1/16S183J
R 338		RS1/16S183J
R 351		RS1/16S221J
R 352		RS1/16S221J
R 353		RS1/16S221J
R 354		RS1/16S221J
R 356		RS1/16S221J
R 357		RS1/16S221J
R 358		RS1/16S221J
R 359		RS1/16S103J
R 360		RS1/16S103J
R 361		RS1/16S105J
R 362		RS1/16S331J
R 363		RS1/16S0R0J
R 364		RS1/16S0R0J
R 365		RS1/16S102J
R 366		RS1/16S102J
R 369		RS1/16S222J
R 370		RS1/16S102J
R 403		RS1/16S153J
R 404		RS1/16S473J
R 405		RS1/10S472J
R 406		RS1/4S182J
R 407		RS1/16S153J
R 408		RS1/16S473J
R 409		RS1/10S472J
R 410		RS1/4S182J
R 412		RS1/16S104J
R 414		RS1/16S224J
R 421		RS1/16S182J
R 422		RS1/16S182J
R 423		RS1/16S103J
R 434		RS1/16S221J
R 435		RS1/16S221J
R 436		RS1/16S471J
R 437		RS1/16S331J
R 439		RS1/16S223J
R 440		RS1/16S472J
R 441		RS1/16S331J
R 443		RS1/16S471J
R 444		RS1/16S221J
R 445		RS1/16S561J
R 447		RS1/16S223J
R 448		RS1/16S562J
R 451		RS1/16S472J
R 452		RS1/16S223J
R 453		RS1/16S103J
R 455		RS1/16S103J
R 456		RS1/16S223J
R 457		RS1/16S823J
R 458		RS1/16S561J
R 459		RS1/16S561J
R 460		RS1/16S561J
R 463		RS1/16S102J
R 468		RS1/16S473J
R 471		RS1/4S101J
R 472		RS1PMF680J
R 473		RS1/16S0R0J
R 522		RS1/16S222J

Circuit Symbol and No.	Part Name	Part No.
R 524		RS1/16S222J
R 525		RS1/16S473J
R 526		RS1/16S681J
R 527		RS1/16S681J
R 528		RS1/16S681J
R 529		RS1/16S103J
R 530		RS1/16S681J
R 531		RS1/16S473J
R 532		RS1/16S473J
R 533		RS1/16S472J
R 534		RS1/16S393J
R 535		RS1/16S473J
R 536		RS1/16S473J
R 537		RS1/16S473J
R 538		RS1/16S681J
R 539		RS1/16S681J
R 541		RS1/16S0R0J
R 542		RS1/16S0R0J
R 543		RS1/16S472J
R 544		RS1/16S472J
R 545		RS1/16S182J
R 546		RS1/16S182J
R 549		RS1/16S0R0J
R 550		RS1/16S0R0J
R 561		RS1/16S104J
R 562		RS1/16S123J
R 564		RS1/16S103J
R 565		RS1/16S362J
R 566		RS1/16S153J
R 567		RS1/16S153J
R 568		RS1/16S222J
R 569		RS1/16S164J
R 570		RS1/16S333J
R 571		RS1/16S473J
R 582		RS1/16S332J
R 584		RS1/16S332J
R 586		RS1/16S473J
R 588		RS1/16S562J
R 611		RS1/16S0R0J
R 612		RS1/16S104J
R 613		RS1/16S0R0J
R 614		RS1/16S104J
R 631		RS1/16S392J
R 632		RS1/16S103J
R 633		RS1/16S392J
R 634		RS1/16S103J
R 635		RS1/16S102J
R 637		RS1/16S102J
R 649		RS1/16S102J
R 650		RS1/16S102J
R 651		RS1/16S681J
R 660		RS1/16S473J
R 661		RS1/16S473J
R 662		RS1/16S473J
R 663		RS1/16S473J
R 664		RS1/16S473J
R 665		RS1/16S473J
R 702		RS1/16S102J
R 703		RS1/16S473J
R 704		RS1/16S102J
R 705		RS1/16S152J
R 707		RS1/16S102J
R 708		RS1/16S0R0J
R 709		RS1/16S0R0J
R 710		RS1/16S0R0J
R 711		RS1/16S473J
R 712		RS1/16S0R0J
R 713		RS1/16S473J
R 714		RS1/16S0R0J
R 715		RS1/16S104J

		=====Circuit Symbol and No.	===Part Name	Part No.
R	716			RS1/16S0R0J
R	717			RS1/16S473J
R	718			RS1/16S102J
R	719			RS1/16S0R0J
R	720			RS1/16S0R0J
R	721			RS1/16S0R0J
R	722			RS1/16S102J
R	723			RS1/16S473J
R	724			RS1/16S472J
R	725			RS1/16S0R0J
R	726			RS1/16S471J
R	727			RS1/16S0R0J
R	728			RS1/16S0R0J
R	729			RS1/16S102J
R	730			RS1/16S0R0J
R	731			RS1/16S332J
R	732			RS1/16S0R0J
R	733			RS1/16S102J
R	734			RS1/16S102J
R	735			RS1/16S102J
R	736			RS1/16S102J
R	737			RS1/16S473J
R	740			RS1/16S102J
R	742			RS1/16S102J
R	743			RS1/16S473J
R	744			RS1/16S102J
R	746			RS1/16S102J
R	748			RS1/16S102J
R	750			RS1/16S102J
R	753			RS1/16S102J
R	754			RS1/16S473J
R	755			RS1/16S102J
R	756			RS1/16S473J
R	759			RS1/16S472J
R	760			RS1/16S103J
R	761			RS1/16S102J
R	762			RS1/16S104J
R	763			RS1/16S102J
R	764			RS1/16S102J
R	765			RS1/16S102J
R	767			RS1/16S102J
R	768			RS1/16S681J
R	769			RS1/16S103J
R	774			RS1/16S102J
R	775			RS1/16S102J
R	778			RS1/16S472J
R	779			RS1/16S472J
R	781			RS1/16S0R0J
R	782			RS1/16S0R0J
R	783			RS1/4S101J
R	784			RS1/4S101J
R	785			RS1/16S0R0J
R	787			RS1/16S104J
R	788			RS1/16S472J
R	790			RS1/16S473J
R	791			RS1/16S0R0J
R	801			RS1/16S103J
R	802			RS1/16S103J
R	803			RS1/16S331J
R	804			RS1/16S103J
R	805			RS1/16S222J
R	806			RS1/16S103J
R	807			RS1/16S684J
R	808			RS1/16S684J
R	809			RS1/16S223J
R	810			RS1/16S104J
R	811			RS1/16S103J
R	812			RS1/16S223J
R	813			RS1/16S472J
R	814			RS1/16S103J

		=====Circuit Symbol and No.	===Part Name	Part No.
R	815			RS1/10S681J
R	816			RS1/16S473J
R	817			RS1/16S473J
R	818			RS1/16S473J
R	819			RS1/16S473J
R	853			RS1/16S102J
R	854			RS1/16S471J
R	855			RS1/16S222J
R	856			RS1/16S242J
R	857			RS1/16S102J
R	858			RS1/16S471J
R	859			RS1/16S152J
R	860			RS1/16S222J
R	870			RS1/16S472J
R	871			RS1/8S222J
R	872			RS1/10S103J
R	873			RS1/16S123J
R	874			RS1/16S103J
R	875			RS1/16S103J
R	876			RS1/16S103J
R	1411			RS1/16S331J
R	1412			RS1/16S0R0J

CAPACITORS

C	307			CKSRYB222K50
C	308			CKSRYB222K50
C	309			CKSRYB222K50
C	310			CKSRYB222K50
C	321			CKSRYB222K50
C	322			CKSRYB222K50
C	323			CKSRYB222K50
C	324			CKSRYB222K50
C	327			CEAL220M10
C	328			CEAL220M10
C	329			CKSRYB104K25
C	330			CEAL220M10
C	331			CEJQ3R3M50
C	332			CEJQ3R3M50
C	333			CEJQ3R3M50
C	334			CEJQ3R3M50
C	335			CCSRCH150J50
C	336			CCSRCH150J50
C	337			CEJQ470M10
C	338			CKSRYB473K50
C	339			CEAL220M10
C	340			CKSRYB104K25
C	345			CKSRYB222K50
C	350			CKSRYB102K50
C	351			CKSRYB334K10
C	352			CKSRYB334K10
C	353			CKSRYB334K10
C	354			CKSRYB334K10
C	355			CKSRYB334K10
C	356			CKSRYB334K10
C	357			CKSRYB334K10
C	358			CKSRYB102K50
C	359			CKSRYB222K50
C	360			CEAL220M10
C	362			CKSRYB102K50
C	363			CEAL220M10
C	364			CCSRCH100D50
C	365			CCSRCH100D50
C	366			CKSRYB103K50
C	368			CKSRYB104K25
C	371			CKSRYB104K25
C	372			CEALNP4R7M35
C	373			CKSRYB104K25
C	374			CEALNP4R7M35
C	375			CKSRYB104K25

Circuit Symbol and No.		Part Name	Part No.
C	376		CEALNP4R7M35
C	377		CEAL101M10
C	380		CKSRYB104K25
C	381		CEALNP4R7M35
C	384		CKSRYB104K25
C	385		CKSRYB222K50
C	386		CKSRYB105K10
C	387		CKSRYB103K50
C	388		CEJQ470M10
C	390		CKSRYB104K25
C	393		CKSRYB104K25
C	397		CKSRYB104K25
C	398		CKSRYB222K50
C	399		CKSRYB222K50
C	401		CKSRYB103K50
C	402		CEJQ2R2M50
C	403		CKSRYB103K50
C	404		CEJQ2R2M50
C	408		CKSQYB103K50
C	420	470µF/16V	CCH1459
C	422		CKSRYB103K50
C	423		CKSRYB103K50
C	424		CEHAT101M10
C	425		CKSRYB103K50
C	432		CKSRYB473K50
C	433		CEHAT470M16
C	434		CKSRYB103K50
C	435		CEAT471M10
C	442		CKSRYB473K50
C	443		CEHAT101M10
C	444		CKSRYB103K50
C	461		CKSRYB102K50
C	469		CCSRCH221J50
C	470		CCSRCH221J50
C	471	3300µF/16V	CCH1177
C	472		CKSQYB332K50
C	473		CKSQYB332K50
C	474		CKSQYB332K50
C	475		CKSQYB332K50
C	476		CKSQYB332K50
C	477		CKSQYB332K50
C	478		CKSQYB332K50
C	479		CKSQYB332K50
C	480		CKSQYB102K50
C	481		CKSQYB393K50
C	484		CCSQCH221J50
C	485		CCSQCH221J50
C	486		CKSQYB222K50
C	487		CKSQYB222K50
C	488		CKSQYB222K50
C	489		CKSQYB222K50
C	490		CKSQYB473K50
C	503		CKSQYB103K50
C	519		CKSRYB103K50
C	520		CKSRYB103K50
C	521		CEAT101M16
C	522		CKSRYB103K50
C	523		CEAT100M50
C	524		CKSRYB472K50
C	525		CKSRYB183K50
C	526		CKSRYB183K50
C	527		CKSRYB562K25
C	528		CKSRYB562K25
C	530		CCSRCH100D50
C	531		CKSRYB102K50
C	561		CEJQ3R3M50
C	562		CKSRYB333K25
C	563		CEJQNP1R0M50
C	564		CQMA683J50
C	565		CQMA333J50
C	566		CQMA333J50
C	567		CQMA333J50
C	568		CKSRYB224K10
C	569		CKSRYB473K50
C	570		CKSRYB153K50
C	571		CKSRYB472K50
C	572		CEJQ101M10
C	573		CKSRYB392K50
C	574		CKSRYB334K10
C	575		CKSRYB102K50
C	585		CKSRYB223K50
C	713		CSZS100M16
C	781		CKSRYB104K25
C	782		CKSRYB223K50
C	783		CKSRYB103K50
C	801		CFTNA224J50
C	802		CFTNA224J50
C	803		CFTNA224J50
C	804		CFTNA224J50
C	805		CKSQYB104K25
C	806		CFTNA105J50
C	807		CEJQ100M50
C	808		CEJQ1R0M50
C	809		CEJQ330M16
C	812		CKSRYB473K50
C	850		CKSRYB103K50
C	851		CKSRYB102K50
C	853		CKSRYB103K50
C	854		CKSRYB103K50
C	856		CEJQ470M16
C	857		CKSRYB103K50
C	870		CEJQ1R0M50
C	871		CEJQ1R0M50
C	877		CKSRYB102K50
C	1411		CKSRYB473K50
C	1412		CEAT101M10

B Unit Number : CWM8738
Unit Name : Keyboard Unit

MISCELLANEOUS

IC	901	IC	UPD16432B-001
Q	912	Transistor	2SB1132
Q	913	Transistor	IMD3A
D	901	Diode	MA111
D	902	Diode	MA111
D	903	Diode	MA111
D	904	Diode	MA111
D	905	Diode	MA111
D	906	Diode	MA111
D	931	LED	SML-310YT(KL)
D	932	LED	SML-310YT
D	933	LED	SML-310YT
D	934	LED	SML-310YT
D	935	LED	SML-310YT
D	936	LED	SML-310YT
D	937	LED	SML-310YT
D	940	LED	SML-310YT
D	941	LED	SML-310YT
D	942	LED	SML-310YT
D	943	LED	SML-310YT
D	944	LED	SML-310YT
D	946	LED	SML-310YT
D	947	LED	SML-310YT
D	948	LED	SML-310YT
D	949	LED	SML-310YT
D	950	LED	SML-310YT
D	951	LED	SML-310YT
D	952	LED	SML-310YT
D	953	LED	SML-310YT
D	954	LED	SML-310YT

=====Circuit Symbol and No.	===	Part Name	Part No.
D	957	LED	SML-310YT
D	958	LED	SML-310YT
D	967	LED	SML-310YT
D	968	LED	SML-310YT
D	973	LED	SML-310YT
D	974	LED	SML-310YT
D	988	LED	SML-310YT
D	990	LED	SML-310YT
D	994	LED	SML-310YT
L	901	Inductor	CTF1379
L	902	Inductor	CTF1379
S	901	Switch	CSG1154
S	902	Switch	CSG1154
S	903	Switch	CSG1154
S	904	Switch	CSG1154
S	905	Switch	CSG1154
S	906	Switch	CSG1154
S	907	Switch	CSG1154
S	908	Switch	CSG1154
S	909	Switch	CSG1154
S	910	Switch	CSG1154
S	911	Switch	CSG1154
S	912	Switch	CSG1154
S	913	Switch	CSG1154
S	914	Switch	CSG1154
S	915	Switch	CSG1154
S	916	Switch	CSG1154
S	917	Switch	CSG1154
S	918	Switch	CSG1154
S	919	Switch	CSG1154
S	920	Switch	CSG1154
S	921	Switch	CSG1154
S	922	Switch	CSG1154
S	923	Switch	CSG1154
S	924	Switch	CSG1154
IL	901	Lamp 8V 60mA	CEL1742
IL	902	Lamp 8V 60mA	CEL1742
		LCD	CAW1809

RESISTORS

R	901		RS1/16S681J
R	902		RS1/16S681J
R	904		RS1/16S681J
R	905		RS1/16S221J
R	906		RS1/16S681J
R	907		RS1/16S104J
R	908		RS1/16S473J
R	909		RS1/16S102J
R	910		RS1/16S473J
R	911		RS1/16S103J
R	912		RS1/16S473J
R	913		RS1/16S152J
R	917		RS1/16S222J
R	918		RS1/16S222J
R	919		RS1/16S222J
R	920		RS1/16S222J
R	923		RS1/16S473J
R	924		RS1/16S473J
R	925		RS1/16S473J
R	926		RS1/16S473J
R	927		RS1/16S102J
R	928		RS1/16S102J
R	929		RS1/16S102J
R	930		RS1/16S820J
R	931		RS1/16S820J
R	932		RS1/16S820J
R	933		RS1/16S820J
R	936		RS1/16S820J
R	937		RS1/16S820J
R	938		RS1/16S820J

=====Circuit Symbol and No.	===	Part Name	Part No.
R	939		RS1/16S820J
R	940		RS1/16S820J
R	941		RS1/16S820J
R	942		RS1/16S820J
R	943		RS1/16S820J
R	944		RS1/16S820J
R	945		RS1/16S820J
R	949		RS1/16S910J
R	950		RS1/16S910J
R	951		RS1/16S910J
R	955		RS1/16S910J
R	956		RS1/16S910J
R	957		RS1/16S910J
R	960		RS1/16S102J
R	961		RS1/16S102J
R	962		RS1/16S102J
R	963		RS1/16S102J
R	965		RS1/16S102J
R	966		RS1/16S102J
R	968		RS1/16S0R0J
R	970		RS1/16S0R0J
R	971		RS1/16S0R0J
R	973		RS1/16S0R0J
R	979		RS1/16S910J
R	980		RS1/16S910J
R	991		RS1/10S200J
R	992		RS1/10S200J
R	994		RS1/10S200J
R	995		RS1/10S200J
R	1925		RS1/16S910J
R	1926		RS1/16S0R0J
R	1933		RS1/16S223J
R	1934		RS1/16S511J
R	1935		RS1/16S511J
R	1945		RS1/16S820J
R	1946		RS1/16S820J
R	1956		RS1/16S0R0J

CAPACITORS

C	903		CKSRYB473K50
C	904		CKSRYB473K50
C	905		CKSRYB473K50
C	906		CKSRYB473K50
C	907		CCSRCH101J50
C	908		CCSRCH101J50
C	909		CKSRYB474K10
C	910		CKSRYB102K50

C Unit Number : CWX2810
Unit Name : CD Core Unit(S10MP3)

MISCELLANEOUS

IC	201	IC	UPD63760GJ
IC	202	IC	MSM51V4265EP-70TS
IC	203	IC	BA033SFP
IC	301	IC	BA5996FM
IC	701	IC	PE5370B
IC	702	IC	TC74VHCT08AFT
IC	703	IC	S-812C33AUA-C2N
Q	101	Transistor	2SB1132
Q	601	Transistor	DTC323TK
Q	602	Transistor	DTC323TK
Q	603	Transistor	2SB709A
Q	701	Transistor	UN2111
D	101	Diode	1SS355
D	201	Diode	1SR154-400
D	601	Diode	MA152WA

=====Circuit Symbol and No.		===Part Name	Part No.
L	201	Inductor	CTF1386
L	202	Inductor	CTF1386
L	204	Inductor	CTF1386
L	205	Inductor	CTF1386
L	206	Inductor	CTF1386
L	207	Inductor	CTF1386
L	208	Inductor	CTF1386
L	209	Inductor	CTF1386
L	211	Inductor	CTF1386
L	212	Inductor	CTF1386
L	701	Inductor	CTF1386
L	702	Inductor	LCYBR22J1608
L	703	Inductor	CTF1386
L	704	Inductor	CTF1386
TH	701	Thermistor	CCX1037
X	201	Ceramic Resonator 16.934MHz	CSS1603
X	701	Ceramic Resonator 16.00MHz	CSS1616
S	901	Switch(HOME)	CSN1051
S	902	Switch(CLAMP)	CSN1051
S	903	Spring Switch(DSCSNS)	CSN1052
S	904	Switch(12EJ)	CSN1051
S	905	Switch(8EJ)	CSN1051

RESISTORS

R	101		RS1/10S1R5J
R	102		RS1/10S1R5J
R	103		RS1/10S1R5J
R	104		RS1/10S1R5J
R	105		RS1/10S1R5J
R	201		RS1/16SS102J
R	202		RS1/16SS333J
R	203		RS1/16SS333J
R	205		RS1/16SS0R0J
R	207		RS1/16SS0R0J
R	209		RS1/16SS0R0J
R	213		RS1/16SS1002D
R	214		RS1/16SS1002D
R	215		RS1/16SS6801D
R	216		RS1/16SS6801D
R	217		RS1/16SS1002D
R	218		RS1/16SS1002D
R	219		RS1/16SS1002D
R	220		RS1/16SS1002D
R	221		RS1/16SS103J
R	222		RS1/16SS103J
R	223		RS1/16SS103J
R	224		RS1/16SS103J
R	225		RS1/16SS103J
R	226		RS1/16SS393J
R	227		RS1/16SS103J
R	228		RS1/16SS182J
R	229		RS1/16SS103J
R	231		RS1/16SS0R0J
R	232		RS1/16SS182J
R	233		RS1/16SS0R0J
R	237		RS1/16SS104J
R	238		RS1/16SS473J
R	239		RS1/16SS333J
R	240		RS1/16SS0R0J
R	242		RAB4CQ221J
R	243		RAB4CQ221J
R	244		RAB4CQ221J
R	245		RAB4CQ221J
R	246		RAB4CQ221J
R	247		RAB4CQ221J
R	248		RS1/16SS221J
R	249		RS1/16SS221J
R	301		RS1/16SS183J
R	302		RS1/16SS822J

=====Circuit Symbol and No.		===Part Name	Part No.
R	303		RS1/16SS0R0J
R	304		RS1/16SS183J
R	305		RS1/16SS822J
R	306		RS1/16SS0R0J
R	307		RS1/16SS183J
R	308		RS1/16SS822J
R	309		RS1/16SS183J
R	310		RS1/16SS822J
R	311		RS1/16SS0R0J
R	601		RS1/16S101J
R	602		RS1/16S101J
R	603		RS1/16S223J
R	604		RS1/16S223J
R	605		RS1/16SS103J
R	707		RS1/16SS0R0J
R	708		RS1/16SS102J
R	710		RS1/16SS102J
R	711		RS1/16SS102J
R	712		RS1/16SS102J
R	713		RS1/16SS102J
R	714		RS1/16SS473J
R	715		RAB4CQ221J
R	716		RAB4CQ221J
R	717		RAB4CQ221J
R	718		RAB4CQ221J
R	719		RS1/16SS221J
R	720		RS1/16SS471J
R	723		RS1/16SS102J
R	724		RN1/16SE1302D
R	725		RS1/16SS222J
R	726		RS1/16SS103J
R	727		RS1/16SS473J
R	728		RS1/16SS473J
R	729		RS1/16SS223J
R	730		RS1/16SS473J
R	731		RS1/16SS104J
R	732		RS1/16SS104J
R	733		RS1/16SS104J
R	737		RAB4CQ473J
R	739		RAB4CQ473J
R	740		RS1/16SS473J
R	742		RS1/16SS104J
R	744		RS1/16SS104J
R	745		RS1/16SS473J
R	746		RS1/16SS104J
R	747		RS1/16SS104J
R	748		RS1/16SS104J
R	751		RS1/16SS104J
R	754		RS1/16SS102J
R	755		RS1/16SS102J
R	756		RS1/16SS104J
R	801		RS1/16SS104J
R	802		RS1/16SS473J
R	803		RS1/16SS273J
R	901		RS1/16SS221J
R	902		RS1/16SS221J
R	903		RS1/16SS221J
R	904		RS1/16SS221J
R	905		RS1/16SS221J
R	906		RS1/16SS221J

CAPACITORS

C	101		CKSSYB104K10
C	102		CKSSYB104K10
C	103		CEV101M16
C	104		CEV101M4
C	105		CKSSYB104K10

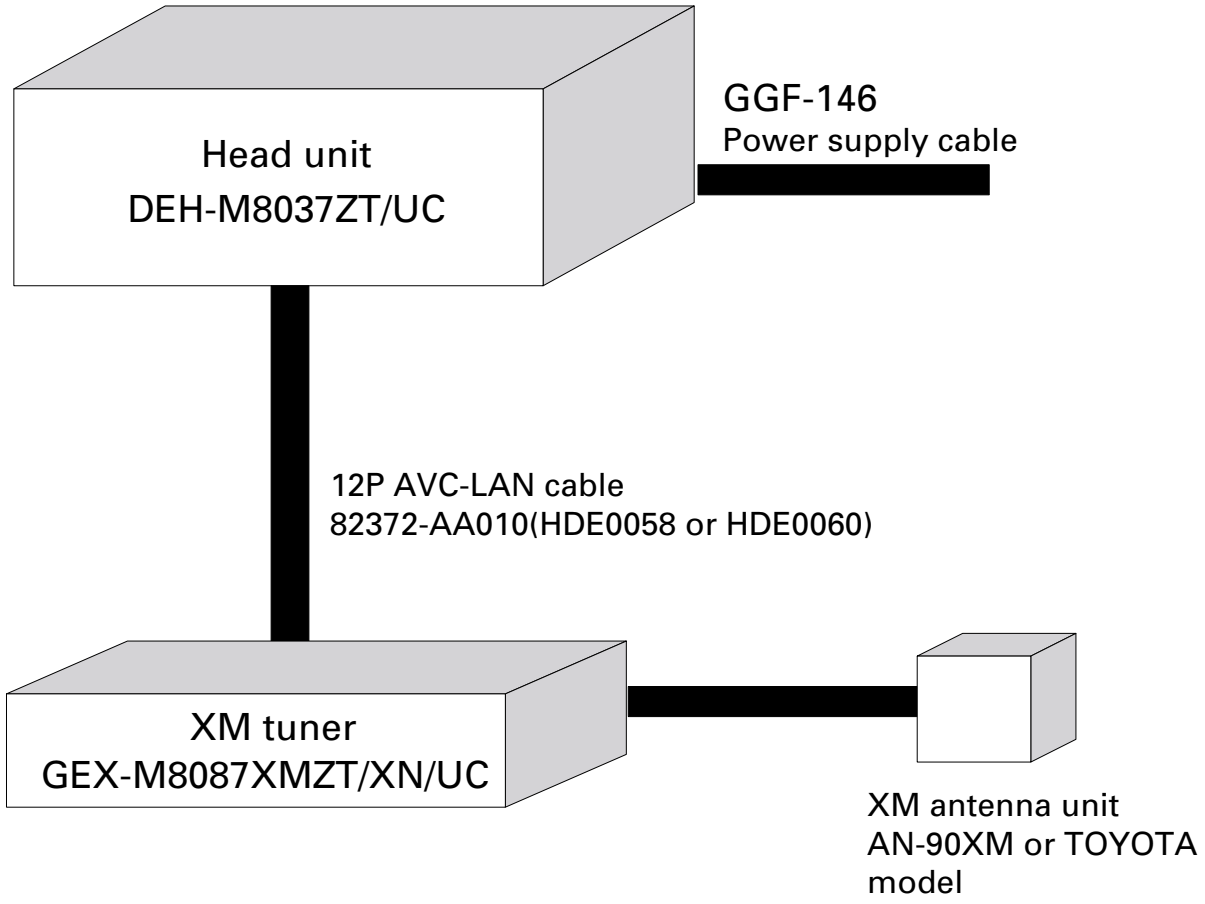
=====Circuit Symbol and No.		===Part Name	Part No.
C	106		CCSRCH101J50
C	108		CKSSYB104K10
C	109		CEV100M16
C	201		CKSSYB471K50
C	202		CKSSYB104K10
C	203		CKSSYB104K10
C	204		CEV220M6R3
C	205		CKSSYB103K16
C	206		CKSSYB103K16
C	207		CEV221M4
C	208		CKSSYB104K10
C	209		CKSSYB104K10
C	210		CKSSYB104K10
C	211		CKSSYB104K10
C	216		CKSSYB332K50
C	217		CKSSYB104K10
C	218		CKSSYB223K16
C	219		CKSSYB104K10
C	220		CKSSYB103K16
C	221		CKSSYB104K10
C	222		CCSSCH270J50
C	223		CCSSCJ3R0C50
C	224		CKSSYB104K10
C	225		CKSSYB103K16
C	226		CCSSCH680J50
C	227		CCSSCH470J50
C	228		CKSSYB682K25
C	230		CKSSYB104K10
C	232		CKSSYB104K10
C	233	47µF/6.3V	CCH1436
C	234		CEV221M4
C	235		CKSRYB224K16
C	237		CKSSYB104K10
C	238		CKSSYB104K10
C	239		CCSSCH9R0D50
C	242		CKSSYB104K10
C	243		CKSSYB104K10
C	245		CKSSYB104K10
C	246		CKSSYB104K10
C	301		CKSSYB331K50
C	302		CKSSYB331K50
C	303		CKSSYB472K25
C	304		CKSSYB472K25
C	305		CEV101M16
C	306		CKSRYB224K16
C	601		CCSRCH102J50
C	602		CCSRCH102J50
C	603	4.7µF/25V	CCH1508
C	604	4.7µF/25V	CCH1508
C	701		CKSSYB104K10
C	702		CKSSYB471K50
C	703		CKSSYB103K16
C	704		CEV1R0M50
C	705		CKSSYB104K10
C	707		CKSSYB104K10
C	708		CKSSYB104K10
C	709		CKSSYB103K16
C	710		CKSSYB104K10
C	711	10µF/10V	CCH1349
C	712		CKSRYB224K16
C	713		CKSSYB104K10
C	714		CKSSYB104K10
C	715		CKSSYB103K16
C	716		CKSSYB103K16
C	901		CKSSYB104K10
C	903		CCSRCH101J50

Miscellaneous Parts List

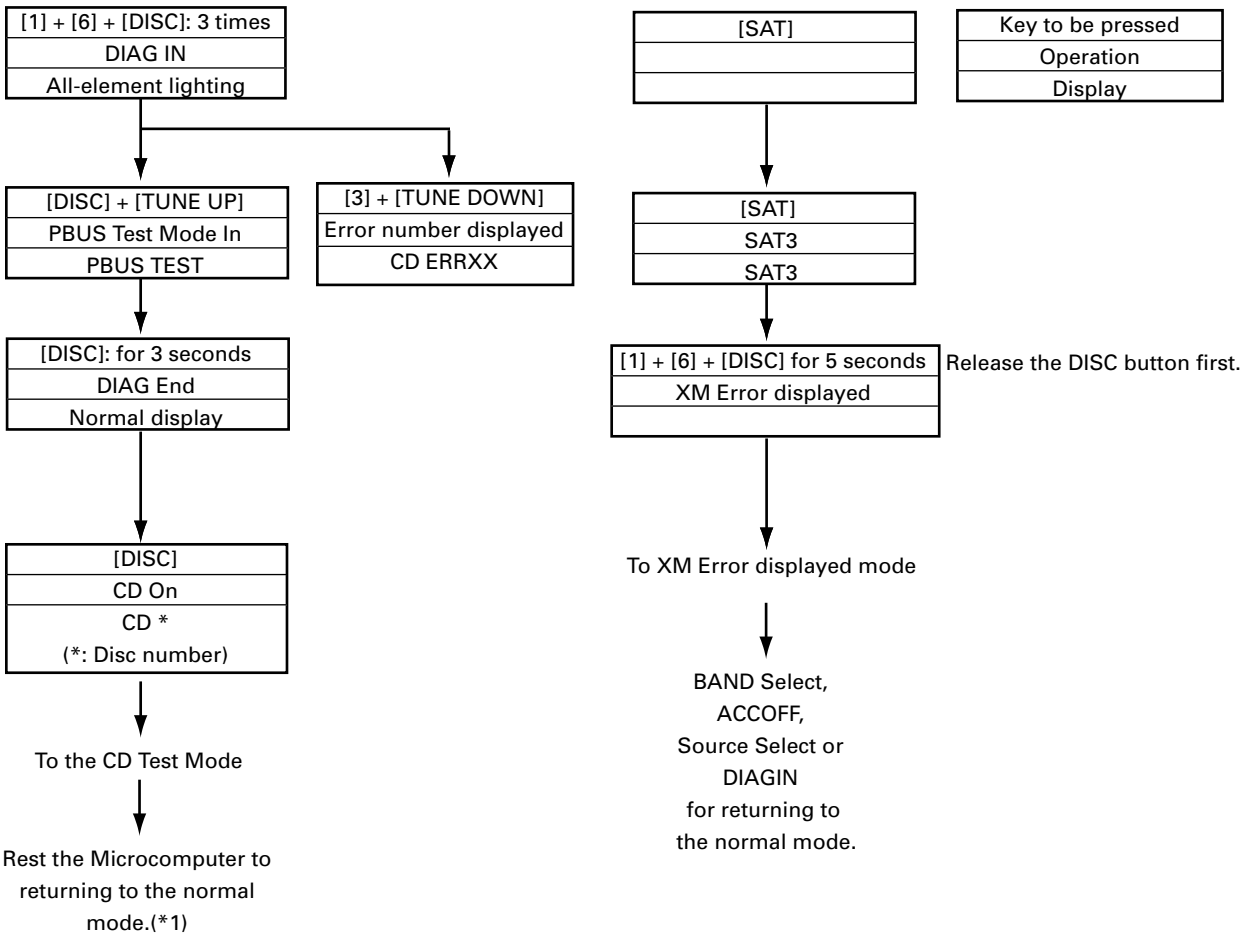
=====Circuit Symbol and No.		===Part Name	Part No.
		Pickup Unit(Service)(P10)	CXX1664
M	1	Motor Unit(SPINDLE)	CXB6007
M	2	Motor Unit(LOADING/CARRIAGE)	CXB8933

6. ADJUSTMENT

6.1 CONNECTION DIAGRAM



6.2 TEST MODE



Notes:

*1) Note that the test mode is cancelled in the system microcomputer by switching the ACC OFF and ON, but that it is not in the CD microcomputer. Use the reset function for complete cancellation of the test mode.

6.3 CD ADJUSTMENT

1) Cautions on adjustments

• In this product the single voltage (3.3V) is used for the regulator. The reference voltage is the REFO1 (1.65V) instead of the GND.
If you should mistakenly short the REFO1 with the GND during adjustment, accurate voltage will not be obtained, and the servo's misoperation will apply excessive shock to the pickup. To avoid such problems:
a. Do not mix up the REFO1 with the GND when connecting the (-) probe of measuring instruments. Especially on an oscilloscope, avoid connecting the (-) probe for CH1 to the GND.
b. In many cases, measuring instruments have the same potential as that for the (-) probe. Be sure to set the measuring instruments to the floating state.
c. If you have mistakenly connected the REFO1 to the GND, turn off the regulator or the power immediately.

• Before mounting and removing filters or leads for adjustment, be sure to turn off the regulator.

• For stable circuit operation, keep the mechanism operating for about one minute or more after the regulator is turned on.

• In the test mode, any software protections will not work. Avoid applying any mechanical or electrical shock to the mechanism during adjustment.

• The RFI and RFO signals with a wide frequency range are easy to oscillate. When observing the signals, insert a resistor of 1k ohms in series.

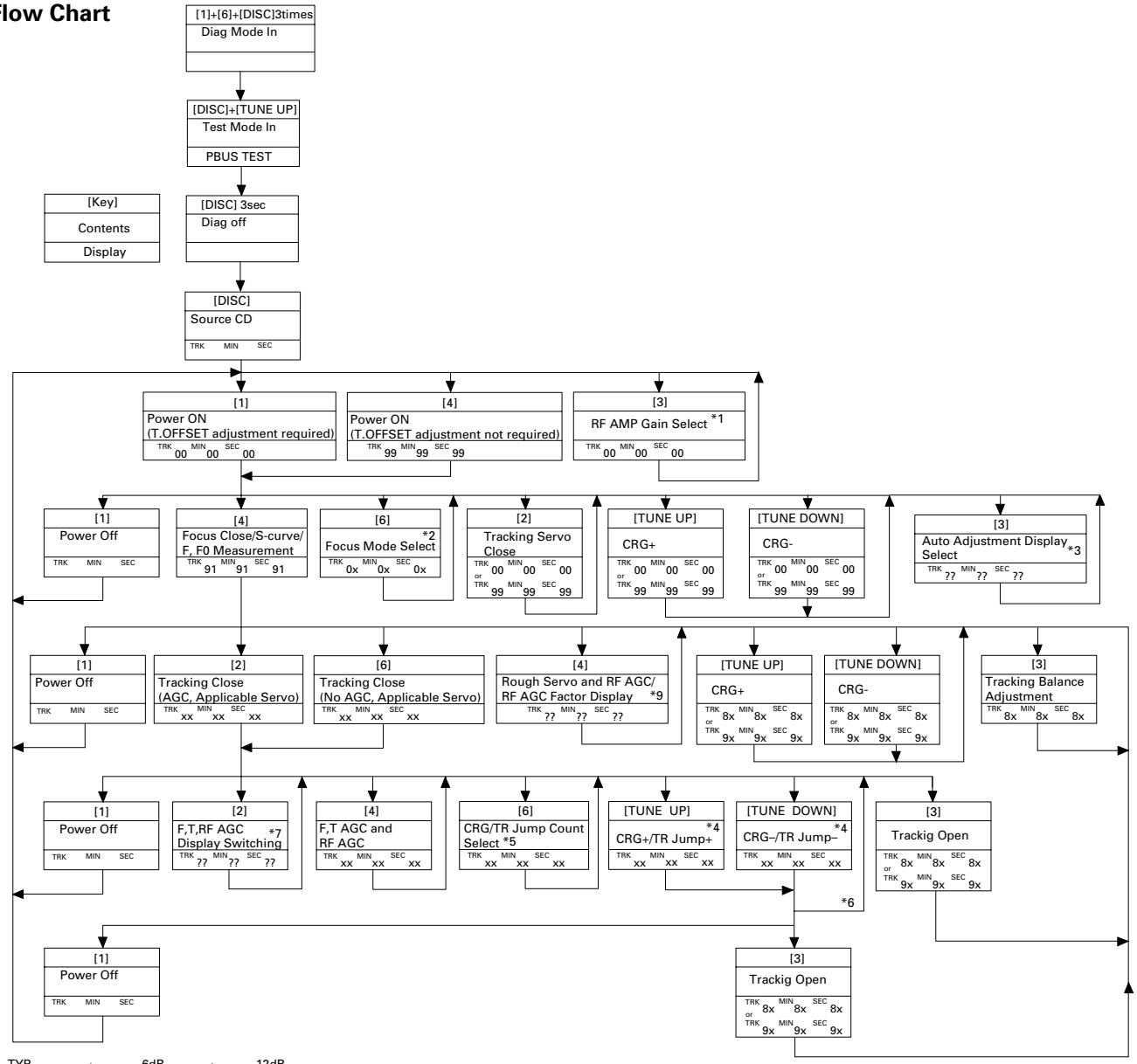
• The load and eject operation is not guarantied with the mechanism upside down. If the mechanism is blocked due to mistaken eject operation, reset the product or turn off and on the ACC to restore it.

2) Test mode

This mode is used to adjust the CD mechanism module.
• To enter the test mode.
See page 46.
• To exit from the test mode.
Turn off the ACC and back up.

Notes:
a. During ejection, do not press any other keys than the EJECT key until the loaded disc is ejected.
b. If you have pressed the TUNE UP key or TUNE DOWN key during focus search, turn off the power immediately to protect the actuator from damage caused by the lens stuck.
c. For the TR jump modes except 100TR, the track jump operation will continue even if the key is released.
d. For the CRG move and 100TR jump modes, the tracking loop will be closed at the same time when the key is released.
e. When the power is turned off and on, the jump mode is reset to the single TR (91), the RF amp gain is set to 0dB, and the auto-adjustment values are reset to the default settings.

● Flow Chart



*1) TYP → -6dB → -12dB

*2) Focus Close → S.Curve Check → LD Off

*3) F.Offset Display →RF Offset Display→ T.Bal Display → Rough Servo.

(F.Cancel value
= (Upper 8 bits of the setting (7F[H] to 80[H] + 128)/4
= 63[D] to 32[D] to 00[D]).

*4) Single TR /4TR / 10TR / 32TR / 100TR

*5) Single TR → 4 TR → 10 TR → 32 TR → 100 TR → CRG Move
9X(8X):91(81) 92(82) 93(83) 94(84) 95(85) 96(86)

*6) Only for the CRG Move and 100TR modes

*7) Track No. / Min / Sec → F.AGC Gain →T.AGC Gain →RF AGC Gain

(F.T. AGC Gain = (Current value/Initial value) x 20)

[Key]	Operation
	Test Mode
[1]	Power ON/OFF
[TUNE UP]	CRG+/TR Jump+ (Toward outer perimeter)
[TUNE DOWN]	CRG-/TR Jump- (Toward inner perimeter)
[2]	Tracking close and AGC and Applicable servo / AGC , AGC display switching
[3]	RF gain select / Offset adjustment display/ Tracking balance adjustment / Tracking open
[4]	Focus Close, S.Curve / Rough Servo/ RF AGC / F,T, RF AGC
[6]	Focus mode select / Tracking close / CRG·TR jump select
[TEXT]	Focus open
[5]	Jump off

*8) CRG motor voltage : 2 [V]

*9)The first press displays the RF AGC coefficient. The second one or after performs the rough servo and RF AGC adjustments, and then displays the RF AGC coefficient.

- In all TR Jump modes except for 100TR, track jump operation continues even after the key is released.
  In the CRG Move and 100TR Jump modes, the tracking servo loop closes at the same time when the key is released.
- When the power is turned off and on, the jump mode, the RF AMP gain setting, and the auto adjustment values are reset to the Single TR (91),0dB, and the factory setting respectively.

Note: When you pressed the [TUNE UP] or [TUNE DOWN] key during the Focus Search, you must turn the power off immediately (otherwise, the lens can stick resulting in actuator damages).

6.4 CHECKING THE GRATING AFTER CHANGING THE PICKUP UNIT

• **Note :**
The grating angle of the PU unit cannot be adjusted after the PU unit is changed. The PU unit in the CD mechanism module is adjusted on the production line to match the CD mechanism module and is thus the best adjusted PU unit for the CD mechanism module. Changing the PU unit is thus best considered as a last resort. However, if the PU unit must be changed, the grating should be checked using the procedure below.

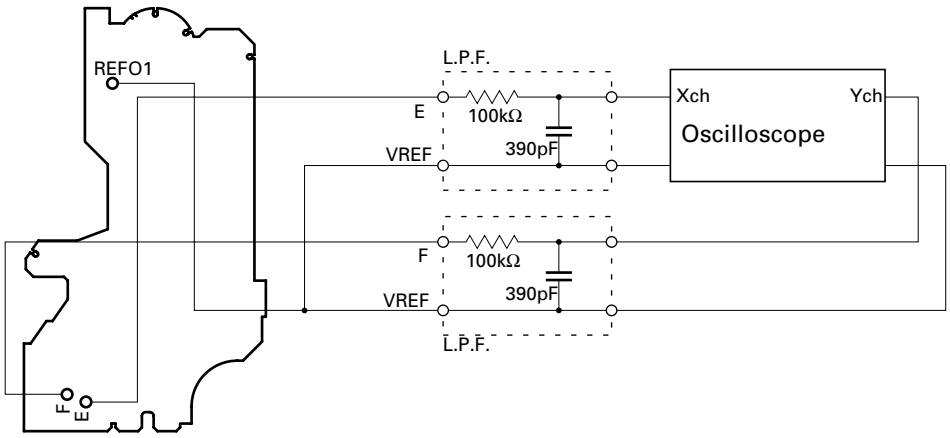
• **Purpose :**
To check that the grating is within an acceptable range when the PU unit is changed.

• **Symptoms of Mal-adjustment :**
If the grating is off by a large amount symptoms such as being unable to close tracking, being unable to perform track search operations, or taking a long time for track searching.

• **Method :**

• Measuring Equipment	• Oscilloscope, Two L.P.F.
• Measuring Points	• E, F, REFO1
• Disc	• ABEX TCD-782
• Mode	• TEST MODE

CD CORE UNIT(S10MP3)



• **Checking Procedure**

1. In test mode, load the disc and switch the 3V regulator on.
2. Using the TUNE UP and TUNE DOWN buttons, move the PU unit to the innermost track.
3. Press key 4 to close focus, the display should read "91". Press key 3 to implement the tracking balance adjustment the display should now read "81". Press key 4. The display will change, returning to "81" on the fourth press.
4. As shown in the diagram above, monitor the LPF outputs using the oscilloscope and check that the phase difference is within 75° . Refer to the photographs supplied to determine the phase angle.
5. If the phase difference is determined to be greater than 75° try changing the PU unit to see if there is any improvement. If, after trying this a number of times, the grating angle does not become less than 75° then the mechanism should be judged to be at fault.

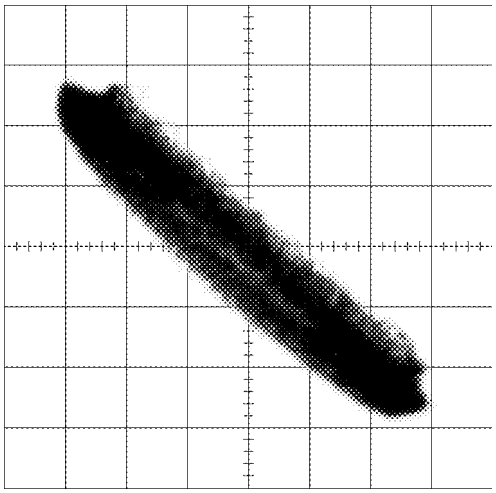
• **Note**
Because of eccentricity in the disc and a slight misalignment of the clamping center the grating waveform may be seen to "wobble" (the phase difference changes as the disc rotates). The angle specified above indicates the average angle.

• **Hint**
Reloading the disc changes the clamp position and may decrease the "wobble".

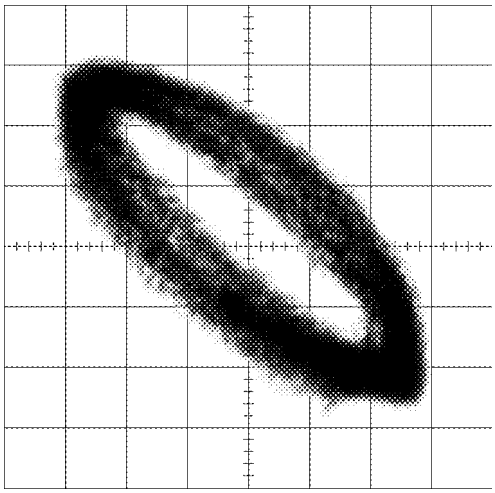
Grating waveform

Ech → Xch 20mV/div, AC
Fch → Ych 20mV/div, AC

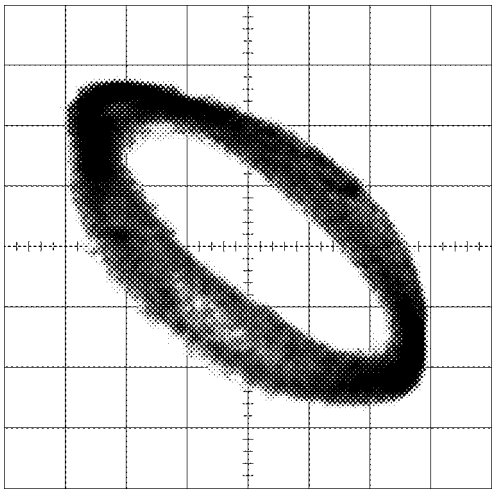
0°



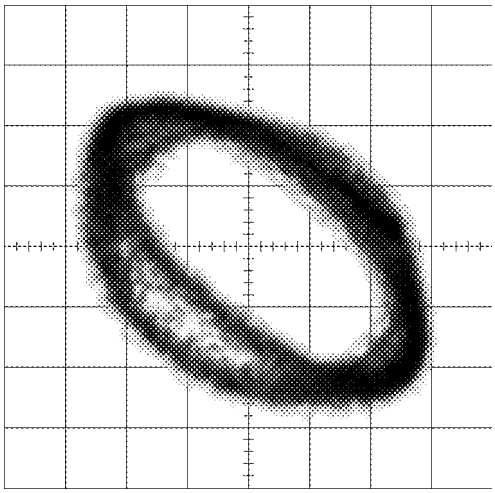
30°



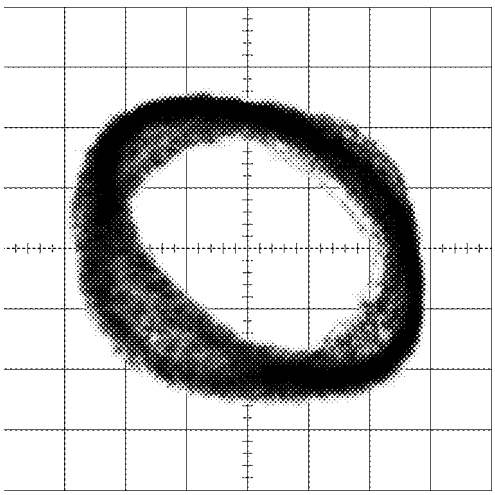
45°



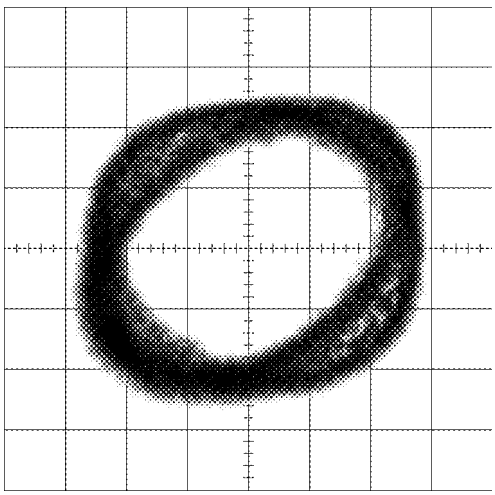
60°



75°



90°



6.5 ERROR MODE

● Error Messages

Error is displayed with number for Error cause when CD is inoperative or stops with Error during operation. The purpose is to reduce nonsense calls from users as well as to assist all related analysis and repair for defects at service station.

(1) Basic Display Method

1) When CSMOD (CD mode area for system) is SERRORM, Error code will be written in DMIN (minutes area for display), DSEC (seconds area for display). The same data shall be written in DMIN and DSEC. DTNO is blank as usual.

2) Display Example of Head Unit

The following is about LCD display ability. xx is Error number.

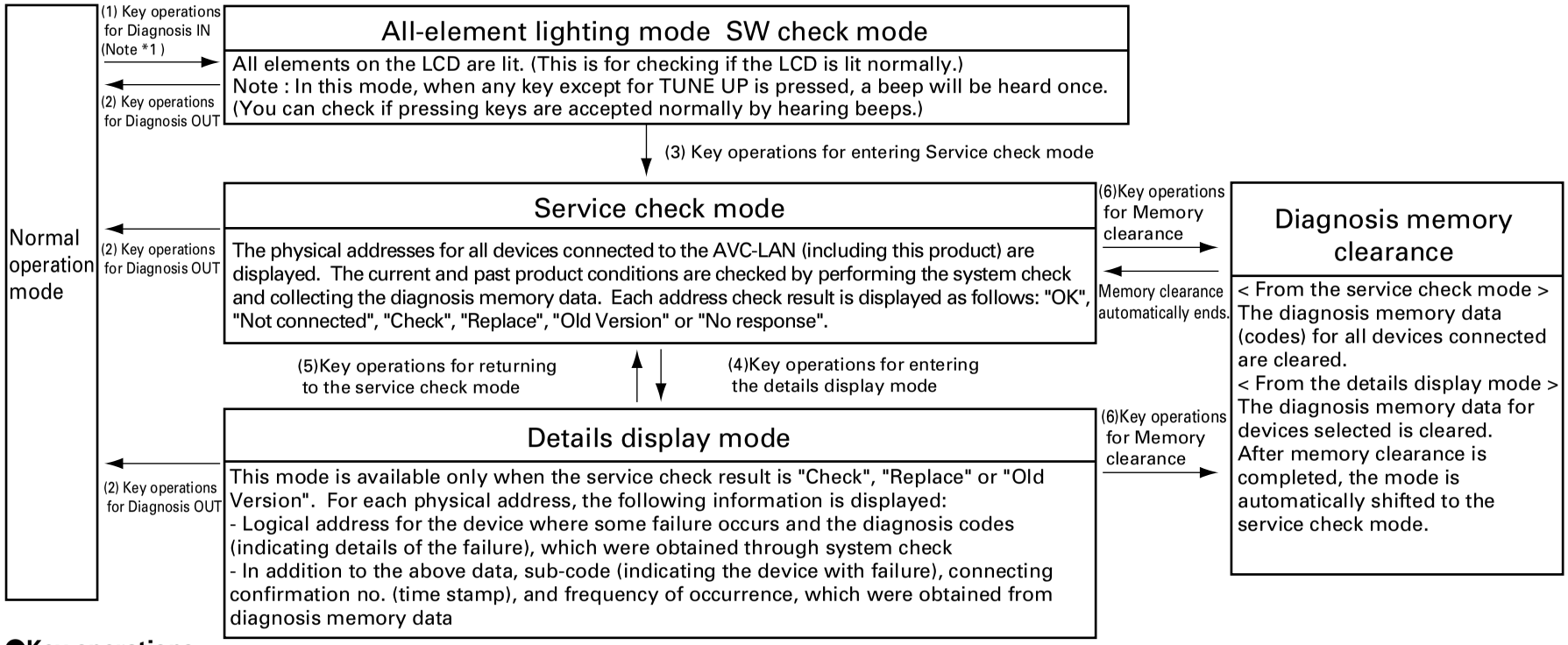
8 digits	6 digits	4 digits
ERROR–xx	ERR–xx OR Err–xx	E–xx

(2) Error Code List

No.	Classification	Contents	Details • Cause
10	Electricity	Carriage Home NG	CRG can't move to the inner. CRG can't move from the inner. → HOME SW failure, CRG movement failure.
11	Electricity	Focus Search NG	Focus can't be caught. → Back of Disc / Severe dirt and vibration.
12	Electricity	Spindle Lock NG Subcode NG RF-amp NG	Not spindle, lock. Wrong subcode (can't read). → Defective Spindle. Scratch and dirt on Disc. Intense vibration. The appropriate gain of the RF amp cannot be obtained. → Defective spindle. → Scratched or dirty disc. Severe vibration. Abnormal CD signals. → Blanc CD-R disc. Disc inserted upside down.
17	Electricity	Setup NG	AGC protection doesn't work, out of Focus soon. → Scratch on Disc/Severe dirt and vibration.
22	Disc	Impossible to play	There is no playable MP3 or WMA file present in a disc. → No MP3 or WMA file exists in a CD-ROM disc inserted.
23	Disc	File Format NG	Contents are stored in an incompatible file format. → The contents in a CD-ROM disc inserted are recorded in a file format other than ISO9660 Level-1 and 2.
30	Electricity	Search Time Out	Can't reach the target address. → Defective CRG/tracking, or scratch on Disc.
44	Disc	Impossible to play	There is no playable TRK No. present in a disc. → All TRK Nos. In a disc inserted are specified as a track which should be skipped, in the track skip information.
50	Mecha	Disc Load / Eject NG	Disc loading/ejection cannot be complete. → Foreign objects entered into the mechanism. Disc caught in between during loading/ejection.
A0	System	Power NG	Power supply (VD) isn't connected to the ground. → Defective SW transistor. Abnormal power (failed connector)

Note : Error doesn't display in mechanism only. (CD off causes mechanism off)
If TOC can't be read, error wouldn't occur, but mechanism still continues its operation.
The upper digits of error code is mainly classified by 3 kinds as follows:
1x: Setup related error, 3x: Search related error, Ax: Other errors.

●Operations and functions



●Key operations

(1) Diagnosis IN With three times of beep sound, the mode change operation completes.	While pressing the CH1 and CH6 buttons simultaneously, press the DISC button three times.
(2) Diagnosis OUT	Keep the DISC button pressed for 1.7 seconds or more and turn the ACC switch OFF.
(3) Entering the Service check mode. With a beep sound, the mode change completes.	Press the TUNE UP button.
(4) Entering the Details display mode.	Press the CH2 button.
(5) Returning to the service check mode.	Press the CH3 button.
(6)Clearing the Memory data	Keep the CH5 button pressed for 1.7 seconds or more.
Change the display (forward)	Press the TUNE UP button.
Change the display (backward)	Press the TUNE DOWN button.

Note *1: To enter the diagnosis IN mode, use the buttons on the head unit.

●Diagnosis mode display

Service check mode

After system check completes, the check results for the devices connected to the AVC-LAN are displayed in turn in order of physical address number as follows:

◆"Physical address"
...The smallest physical address number is displayed first, whose check result will follow it.

Ex. P190
- P190: The physical address is displayed.
- 19: Physical address number (radio cassette)

◆"Check result"
...The check result is displayed.

Ex.
- good: Normal (OK)
- ECHn: Replace
- CHEC: Check
- OLd: Old Version

→ Details display mode

◆"Physical address"
...The next physical address number is displayed.

◆"Connecting confirmation no. (current)"
...The AVC-LAN time stamp is displayed.

Ex. no01
- no: The connecting confirmation number is displayed.
- 01: The current connecting confirmation number (expressed in the hexadecimal number system by using 00 to FF)

The number increases by one each time one minute passes. When 256 minutes pass, the indication returns to 00.

Details display mode (only in case of "Replace", "Check", or "Old Version")

This mode is available only when the service check result is "Replace", "Check" or "Old Version".
To select this mode, press the CH2 key.

◆"Physical address (for selected devices)"
The physical address number is displayed, whose check result details will follow it.

Ex. _ P360
- P360: Physical address number (CD-CH)

◆ "Diagnosis data source"
The detailed items depend on the data source.

Ex. SyS The data was obtained from system check.

◆ "Logical address"
The logical address number for the device with failure is displayed.

Ex. 1L_63
- 1L: Logical address number (CD-CH)
- 63: The logical address is displayed.
- _: Serial number

◆ "Diagnosis code"
The diagnosis code indicates what problem occurs.

Ex. 1d_45
- 1d: Diagnosis code (abnormal EJECT)
- 45: The diagnosis code is displayed.

If there are two or more diagnosis codes, the diagnosis data display will continue.

Ex. COdE The data was obtained from diagnosis memory data.

◆ "Logical address"...The same as that for the SyS data
◆ "Diagnosis code"...The same as that for the SyS data
◆ "Sub code"...This code indicates the device with failure.

Ex. 1P_190
- 1P: The sub code is displayed.

◆ "Connecting confirmation number (when some failure occurs)"... AVC-LAN time stamp

Ex. no01
- no: The connecting confirmation number (expressed in the hexadecimal number system by using 00 to FF)
- 01: The connecting confirmation number is displayed.

◆ "Frequency of occurrence"
...The frequency of failures occurred

Ex. 1c_15
- 1c: The frequency of occurrence expressed in the decimal number system.
- 15: The frequency of occurrence is displayed.

② ⟶ Physical address allocation

①1	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	M.DISP computer	New EMV	New device with AV	New MM ECU	device with AV				Audio ECU	Audio H/U	DVD-P	Rear TV	Rear Control SW	Multi-CD decoder	CD-CH commander	AMP controlled radio tuner
2													Europe GW ECU			XM radio tuner
4												1-DIN Navigation	Consolidated inside panel	Simple LCD	Consolidated SW	
6													Gateway ECU			RSE-M
8			New 1-DIN TV		Europe navigation DISP.M/U		Rear TV with movie mode	Navigation with controls				DISPLAY with SW	FM multiplex DISPLAY	Fr controlled SW	MD-CH commander	
C								MONET ECU					Steering SW	Navigation remote controller	Body computer	
E								Vehicle Information ECU								
1,3,5,7, 9-B,D,F																

Display
P①②③
Ex.P190
Physical address

①2	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Navigation computer	ATIS	VICS	TV tuner	H/W CD-CH	H/W DVD-CH	TEL information ECU		Camera controller							
8						DVD deck										
1-7, 9-F																

①3	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Radio		Cassette	Radio cassette with no CH controller	CD-P		1DIN CD-CH		MD-P		MD-CH		DAT		DCC	
8																TEL ECU
1-7, 9-F																

①4	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	Equalizer				DSP				H/W AMP							
1-F																

①5	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	GPS receiver	ATIS decoder	FM multiplex decoder		CD-CH		MD-CH		CD-ROM -CH		MD-ROM -CH		TEL information			
8			Radio wave beacon										May Day			
C			Optical beacon													
1-7,9-8,D-F																

①6	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	A/C computer								Body computer							
1-F																

Diagnosis code table

Logical address name	Logical address	Diagnosis code	Diagnosis details
Communi-cation control	01H	00	No diagnosis
		01	Abnormal reset
		10	Abnormal +B
		11	Abnormal ACC
		12	Abnormal MUTE
		13	Fuse broken
		20	Microcomputer - abnormal
		21	ROM - abnormal
		22	RAM - abnormal
		23	Bus - abnormal
		24	F-ROM - abnormal
		25	V-RAM - abnormal
		26	Gate allay abnormal
		27	Paint controller abnormal
		28	Backup memory abnormal
		29	Voice output controller abnormal
		2A	Internal power supply abnormal
		30	Sync signal abnormal (input)
		31	Sync signal abnormal (output)
		D0	ECU not connected
		D1	Transmission abnormal
		D2	Connecting confirmation: abnormal
		D4	Connecting confirmation: no response
		D5	Registered device data missing (History of registered devices)
		D6	Master unavailable
		D7	Connecting confirmation: abnormal
		D8	Connecting confirmation: no response
		D9	Last mode abnormal
		DA	Command/order: no response
		DB	Mode status abnormal
		DC	Transmission fault
		DD	Master reset
		DE	Slave reset
		DF	Master abnormal
		E0	Registration completion acknowledgement error
		E1	Voice processor ON abnormal
		E2	ON/OFF command or parameter abnormal
		E3	Registration command transmission
		E4	Multiple frames intermit.
		FF	Diagnosis - no response

Logical address name	Logical address	Diagnosis code	Diagnosis details
Radio	60H	10	AM tuner PLL unlocked
		11	FM tuner PLL unlocked
		40	No antenna connected
		41	Antenna power supply abnormal
		42	Tuner power supply abnormal
		43	AM tuner abnormal
		44	FM tuner abnormal
		45	SW tuner abnormal
TV tuner	40H	10	TV tuner PLL unlocked
		11	FRONTEND abnormal
		40	TV divergence shifting error
		41	TV – no reception
		42	VNR screen error
		43	No antenna connected
		44	Antenna power supply abnormal
		45	SEL +B current – small
		46	SEL +B current – large
Cassette tape	61H	10	Belt broken
		40	Mechanical failure or cassette broken
		41	EJECT failure
		42	TAPE jamming
		43	Dirty head
		44	Mech power supply abnormal
CD CD-P CD-CH	43H 62H 63H	10	CD Mech abnormal
		11	CD loading/unloading abnormal
		12	CD lead-in abnormal
		40	No disc loaded
		41	Incorrect disc
		42	Disc unreadable
		43	CD-ROM abnormal
		44	CD abnormal
		45	EJECT abnormal
		46	Scratches or non-recorded side
		47	CD high temperature detected
		48	Excessive current detected
		50	Tray IN/OUT abnormal
		51	Elevator abnormal
		52	Clamp abnormal
MD MD-CH	64H 65H	10	MD mech abnormal
		11	MD IN/OUT abnormal
		12	MD lead-in abnormal
		40	No disc loaded
		41	Incorrect disc
		42	Disc unreadable
		43	MD-ROM abnormal
		44	MD abnormal
		45	EJECT error
		46	Scratches or non-recorded side
		47	MD high temperature detected
		48	Excessive current detected
		50	Tray IN/OUT abnormal
		51	Elevator abnormal
		52	Clamp abnormal

Logical address name	Logical address	Diagnosis code	Diagnosis details
Navigation /GPS	58H 80H	10	Gyroscope abnormal
		11	GPS receiver abnormal
		12	RTC abnormal
		13	SS section abnormal
		14	No Time updating
		15	TCXO abnormal
		16	PLL lock abnormal
		40	GPS antenna abnormal
		41	GPS antenna power supply abnormal
		42	Map disc reading abnormal
		43	SPD signal abnormal
		44	Player abnormal
		45	High temperature abnormal
FM multiplex (VICS), radio wave beacon, beacon, optical beacon, FM multiplex (data), and FM multiplex tuner	5AH 84H 5BH 83H 82H 9AH	41	Antenna power supply abnormal
		45	Radio wave beacon - no antenna connected
		46	Optical beacon - no antenna connected
		47	No FM antenna connected
		4A	FM receiver abnormal
		4B	Radio wave beacon abnormal
		4C	Optical beacon abnormal
Voice control	85H	40	Voice-control activation SW abnormal
		41	Voice-control Microphone abnormal
Extended communi-cation	02H	40	Multi-CD-CH (optical cable) abnormal
		41	Multi-CD-CH (optical cable) not connected
		42	Multi-CD-CH (CarNet) abnormal
		43	Multi-CD-CH (CarNet) not connected
		50	HIT64 communication not connected
		51	HIT64 communication abnormal
		52	HIT64 BRQ disconnection
		53	HIT64 BRQ short-circuit
		54	HIT64 disconnection
		55	CarNet communication not connected
		56	CarNet communication abnormal
		57	CarNet periodical communication abnormal
Information display/front monitors	32H 34H	10	Video circuit abnormal
		11	Back light abnormal (with no current)
		12	Back light abnormal (with excessive current)
		13	Panel open/close mechanical operation abnormal
		40	Front seat monitor abnormal
		41	Heater abnormal
SW, Audio SW, SW shifting, Command SW	21H 23H 24H 25H	10	Panel SW abnormal
		11	Touch SW failure
XM tuner	C0H	11	PLL Unlock
		12	CODEC Communication Error
		13	SSDEC Communication Error
		14	SSDEC No Response Error
		15	NVM Error
		16	CAP Error
		40	ANTENNA No Contact
		41	ANTENNA Short

7. GENERAL INFORMATION

7.1 DIAGNOSIS

7.1.1 DISASSEMBLY

● **Removing the Grille Assy (Fig.1)**

1 Release the two latches.

2 Release the two latches.

3 Release the two latches.

4 Release the two latches and then remove the Grille Assy.

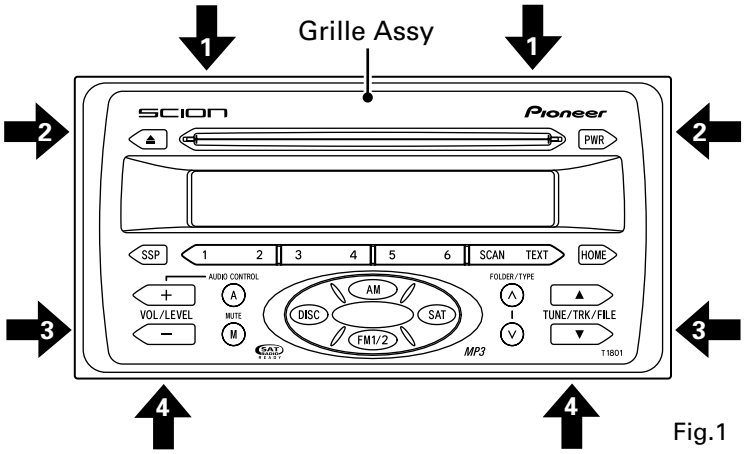


Fig.1

● **Removing the Case (not shown)**

1. Remove the two screws and then remove the Case.

● **Removing the CD Mechanism Module (not shown)**

1. Remove the four screws.
2. Disconnect the connector and then remove the CD Mechanism Module.

● Removing the Chassis (Fig.2)

1 Remove the two screws.

2 Remove the three screws and then remove the Heat Sink.

3 Remove the five screws and then remove the Chassis.

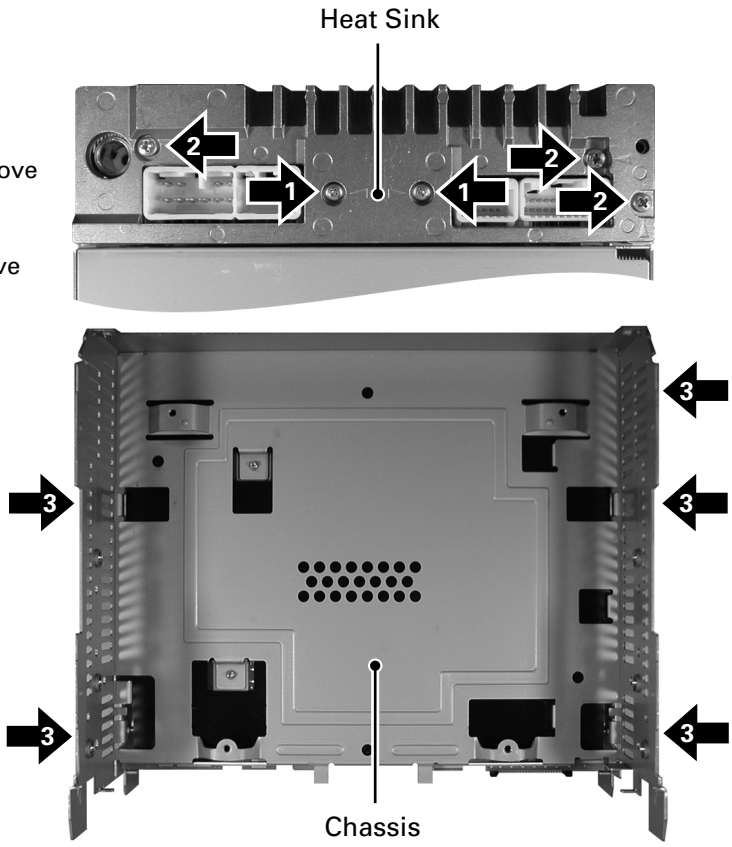


Fig.2

● Removing the Main Unit (Fig.3)

1 Straighten the tabs at five locations indicated.

2 Remove the two screws and then remove the Main Unit.

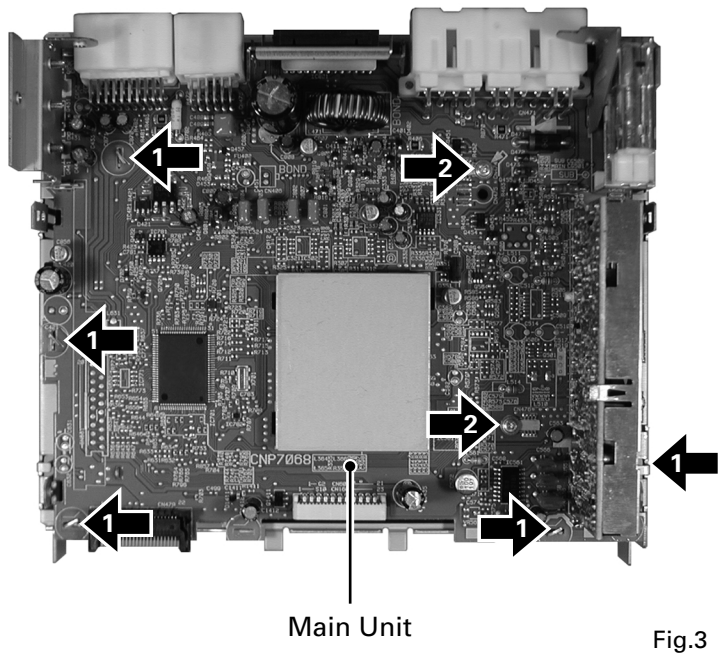
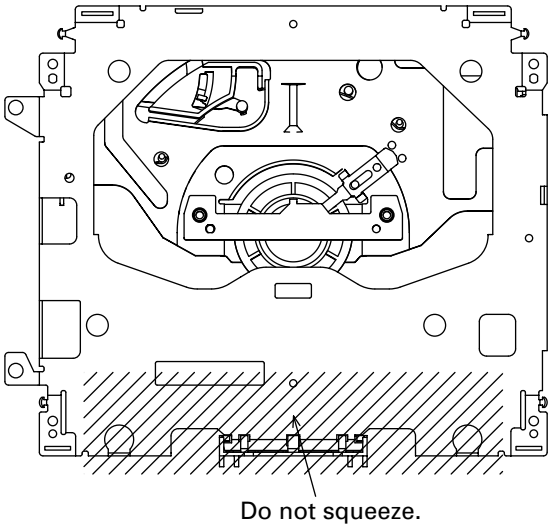


Fig.3

● How to hold the Mechanism Unit

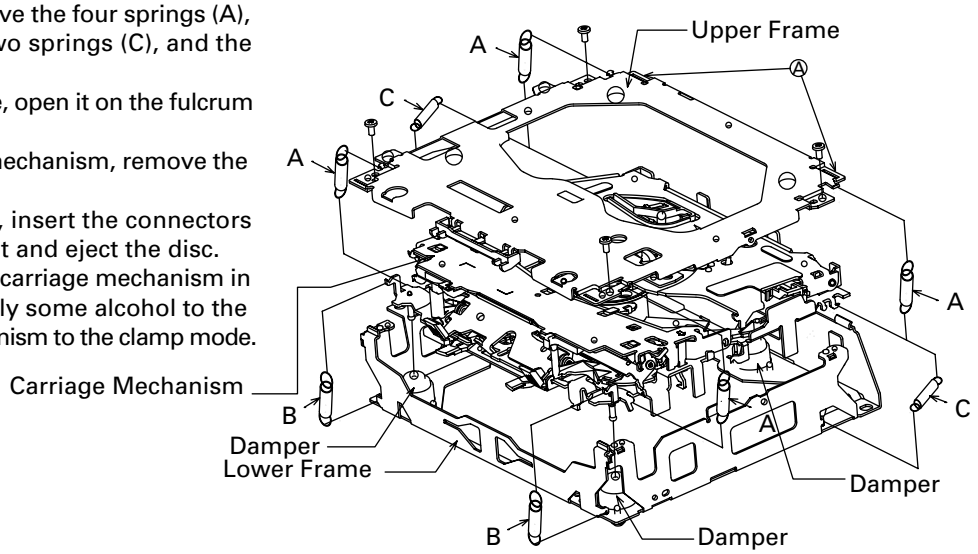
1. Hold the top and bottom frame.
2. Do not squeeze top frame's front portion too tight, because it is fragile.



● Removing the Upper and Lower Frames

1. With a disc clamped, remove the four springs (A), the two springs (B), the two springs (C), and the four screws.
2. To remove the upper frame, open it on the fulcrum A.
3. While lifting the carriage mechanism, remove the three dampers.
4. With the frames removed, insert the connectors coming from the main unit and eject the disc.

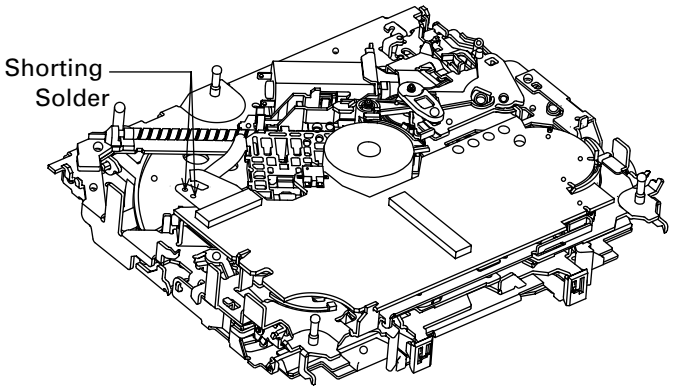
Caution: Before installing the carriage mechanism in the frames, be sure to apply some alcohol to the dampers and set the mechanism to the clamp mode.

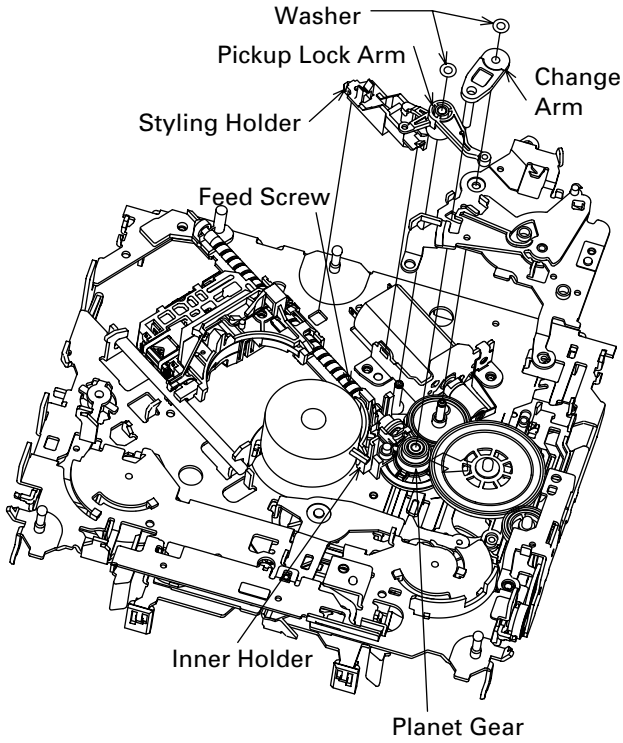


● Removing the Pickup Unit

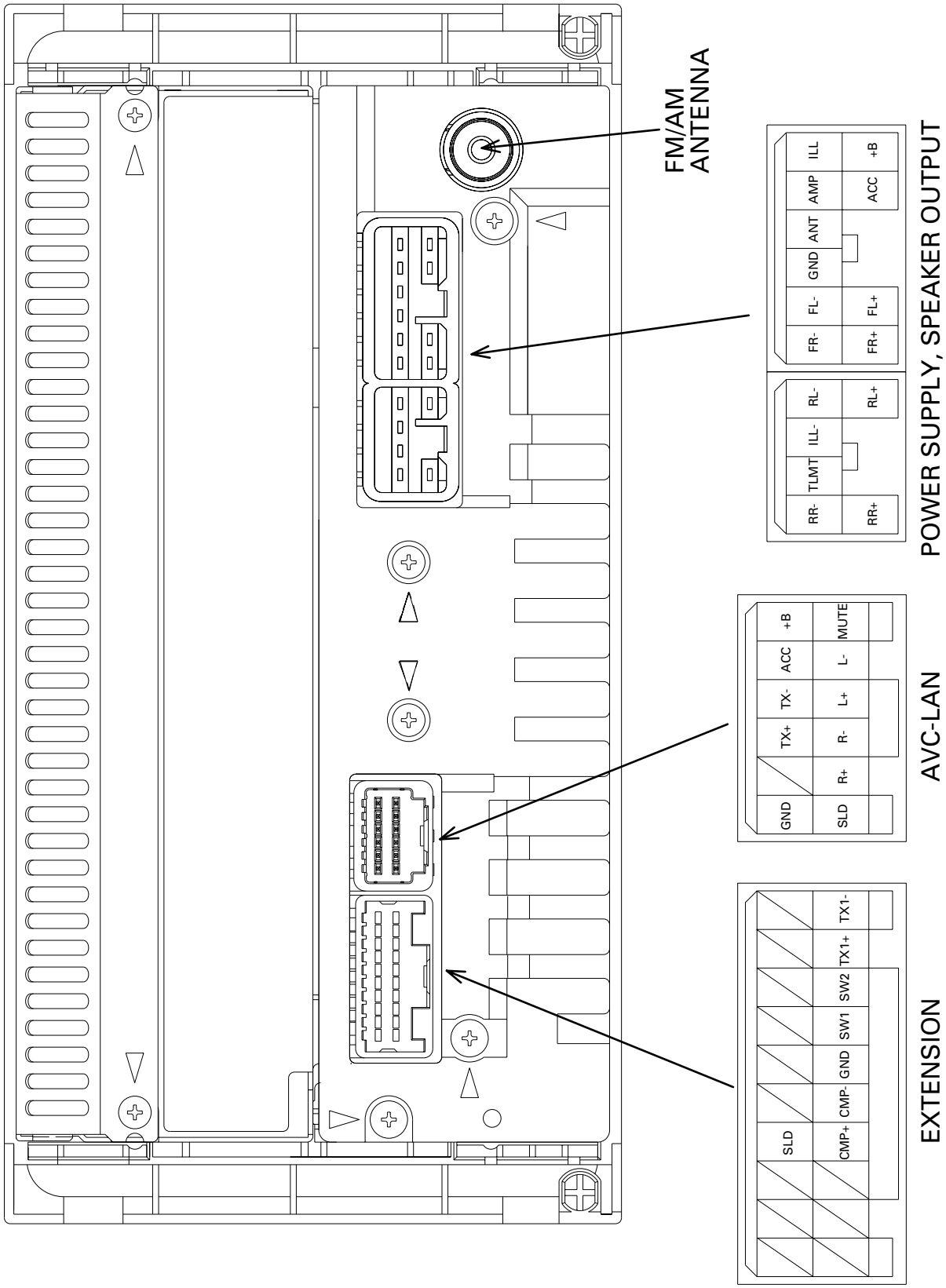
1. Apply shorting solder to the Pickup flexible cable. Disconnect the cable.
2. Set the mechanism to the clamp mode.
3. Remove the lead wires from the inner holder.
4. Remove the two washers, styling holder, change arm, and pickup lock arm.
5. While releasing from the hook of the inner holder, lift the end of the feed screw.

Caution: In assembling, move the planet gear to the load/eject position before setting the feed screw in the inner holder.





7.1.2 CONNECTOR FUNCTION DESCRIPTION



7.2 PARTS

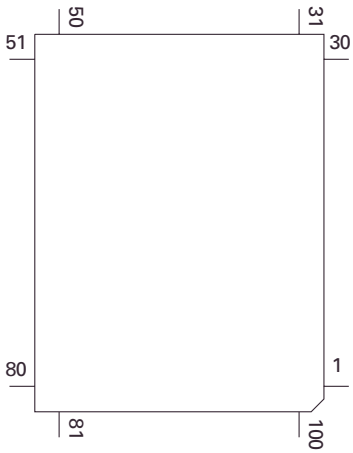
7.2.1 IC

● **Pin Functions (PD5861A)**

Pin No.	Pin Name	I/O	Function and Operation
1	PDO	O	Tuner : Data output
2	$\overline{\text{PCK}}$	O	Tuner : Serial clock output
3	BLDA	O	Dimmer control DA output for back light
4	LCE	O	LCD driver : Chip enable output
5	LDO	O	LCD driver : Data output
6	LDI	I	LCD driver : Data input
7	LCK	O	LCD driver : Clock output
8	BYTE	I	GND
9	CNVSS	I	GND
10	$\overline{\text{LRST}}$	O	LCD driver : Reset output
11	LOFF	O	LCD driver : Off output
12	$\overline{\text{RESET}}$	I	Reset input
13	XOUT	O	Crystal oscillating element connection pin
14	VSS		GND
15	XIN	I	Crystal oscillating element connection pin
16	VCC		Power supply terminal
17	NMI	I	Not used
18	$\overline{\text{ISEN}}$	I	Illumination power sense input
19	$\overline{\text{BSEN}}$	I	Back up power sense input
20	$\overline{\text{ASEN}}$	I	ACC power sense input
21	RX2	I	IP-BUS : Data input
22	PCE2	O	Tuner : Chip enable 2 output
23	PCE1	O	Tuner : Chip enable 1 output
24	BEEP	O	Beep tone output
25	SD	I	Tuner : SD input
26	$\overline{\text{ST}}$	I	Tuner : FM stereo input
27	$\overline{\text{LOCL}}$	O	Local L output
28	ILLPWM	O	Phase width modulation output for illumination dimmer control
29	RX1	I	IP-BUS : Data input
30	TX	O	IP-BUS : Data output
31	BSO	O	P-BUS : Serial data output
32	BSI	I	P-BUS : Serial data input
33	BSCK	O	P-BUS : Serial clock output
34	DSPOK	I	DSP : Interface monitor input
35	DSPDO	O	DSP : Data output
36	DSPDI	I	DSP : Data input
37	DSPCK	O	DSP : Serial clock output
38	DSPERR	O	DSP : Error detect input
39	$\overline{\text{DSPRST}}$	O	DSP : Reset output
40	$\overline{\text{DSPCS}}$	O	DSP : Chip select output
41	DSPACK	I	DSP : Acknowledge input
42	SYSMUTE	O	System mute output
43	TELMUTE	I	Telephone mute input
44	FMPW	O	FM power supply control output
45	AMPW	O	AM power supply control output
46	LANMUTE	I	AVC-LAN mute input
47	IPPW	O	IP-BUS : Power supply control output for IP BUS interface IC
48	ADIN	O	ADIM signal output
49	SYSPW	O	System power supply control output
50	NC		Not used
51	FANPW	O	Not used
52	KEYILL	O	Key illumination control output
53–58	NC		Not used
59	ROMDATA	I/O	ROM correction data input / output
60	ROMCLK	O	ROM correction clock output
61	ROMCS	O	ROM correction chip select output
62	VCC		Power supply terminal

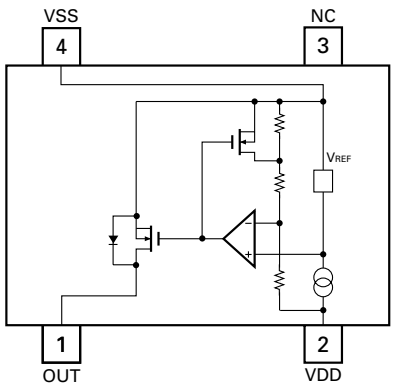
Pin No.	Pin Name	I/O	Function and Operation
63	POWER	I	POWER key input
64	VSS		GND
65–72	NC		Not used
73	$\overline{\text{SWVDD}}$	O	Switched VDD control output
74	$\overline{\text{CDEJ}}$	I	CD eject key sense input
75–80	NC		Not used
81	TESTIN	I	Test program mode input
82	BSREQ	I	P-BUS : Service request input
83	BRXEN	I	P-BUS : Reception enable input
84	BRST	I	P-BUS : Reset input
85	DDSTBY	O	LED driver : Stand-by input
86	DDDT	O	LED driver : Data output
87	DDCK	O	LED driver : Clock output
88	DDST	O	LED driver : Strobe input
89	DMI	I	Rheostat signal input
90	NC		Not used
91	SRSSW1	I	Steering switch 1 input
92,93	NC		Not used
94	TEMP		Temperature detect input
95	SRSSW2	I	Steering switch 2 input
96	AVSS		GND
97	SL	I	Tuner : SD level input
98	VREF	I	A/D converter reference voltage
99	AVCC		Analog power supply
100	PDI	I	Tuner : Data input

* PD5861A

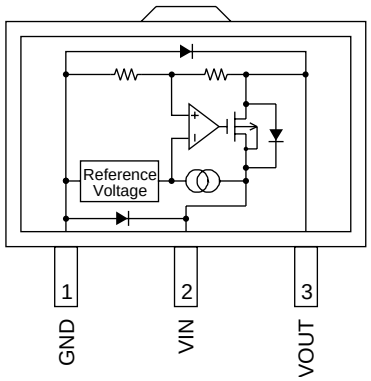


IC's marked by * are MOS type.
Be careful in handling them because they are very liable to be damaged by electrostatic induction.

* S-80835CNNB-B8U



* S-812C56AUA-C3K

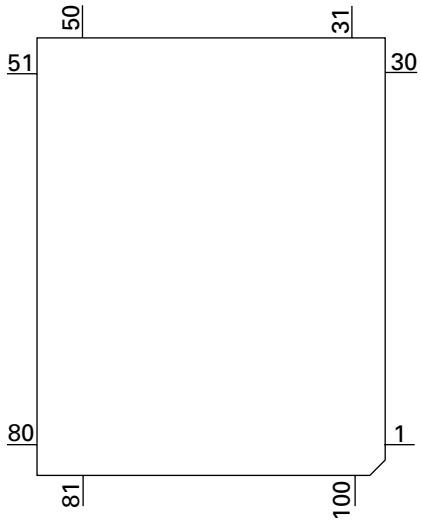


● Pin Function (PM2010A)

Pin No.	Pin Name	I/O	Function and Operation
1	XI	I	Crystal oscillator connection or clock input
2	XO	O	Crystal oscillator connection
3	VDX		Crystal oscillator power supply
4	GNDA1		DAC1GND
5	AOUT1	O	DAC1 volume output
6	DACO1	O	DAC1 output
7	VLI1	I	DAC1 volume input
8	VDD12		DAC1, DAC2 power supply
9	VLI2	I	DAC2 volume input
10	DACO2	O	DAC2 output
11	AOUT2	O	DAC2 volume output
12, 13	GNDA2, 3		DAC2, 3GND
14	AOUT3	O	DAC3 volume output
15	DACO3	O	DAC3 output
16	VLI3	I	DAC3 volume input
17	VREF		DAC operation amp reference potential connection pin
18	VDD34		DAC3, DAC4 power supply
19	VLI4	I	DAC4 volume input
20	DACO4	O	DAC4 output
21	AOUT4	O	DAC4 volume output
22, 23	GNDA4, 5		DAC4, 5GND
24	AOUT5	O	DAC5 volume output
25	DACO5	O	DAC5 output
26	VLI5	I	DAC5 volume input
27	VDD56		DAC5, DAC6 power supply
28	VLI6	I	DAC6 volume input
29	DACO6	O	DAC6 output
30	AOUT6	O	DAC6 volume output
31	GNDA6		DAC6GND
32	GND		Digital section GND
33-36	TEST0-3	I	Test setting 0-3
37	VDD		Digital section VDD
38-41	TP0-3	O	Test port 0-3
42	CKI0	I	DAC clock input 0
43	TP4	O	Test port 4
44	CKI1	I	DAC clock input 1
45	TP5	O	Test port 5
46	CKO0	O	General-purpose clock output 0
47	TP6	O	Test port 6
48	CKO1	O	General-purpose clock output 1
49	VDD		Digital section VDD
50	CKO2	O	Clock output 2
51, 52	ELRO0, 1	I	LRCK input for DOUT0, 1
53, 54	EBCO0, 1	I	BCK input for DOUT0, 1
55, 56	DOUT0, 1	O	Digital serial output 0, 1
57	GND		Digital section GND
58-60	DIN0-2	I	Digital serial input 0-2
61, 62	EBCI0, 1	I	BCK input for DIN0, 1
63, 64	ELRI0, 1	I	LRCK input for DIN0, 1
65	GND		Digital section GND
66	I2CS	I	Microcomputer I/F I2C select
67	$\overline{CS}$	I	Microcomputer I/F chip select
68	IFCK	I	Microcomputer I/F communication clock input
69	IFDI	I	Microcomputer I/F data input
70	IFDO	O	Microcomputer I/F data output
71	$\overline{ACK}$	O	Microcomputer I/F acknowledge output
72	IFOK	O	Microcomputer I/F condition monitor output
73	$\overline{ERR}$	O	Overrun monitor output
74	BT	I	Boot setting

Pin No.	Pin Name	I/O	Function and Operation
75	$\overline{RST}$	I	Reset
76	VDD		Digital section VDD
77	VDAM		ADC microphone input power supply
78	VARM		ADC microphone input operation amp reference potential
79	MIN	I	ADC microphone input
80	GNDM		ADC microphone input GND
81-86	LIN-1-6	I	ADC Lch input 1-6
87-92	RIN-1-6	I	ADC Rch input 1-6
93	GNDAL		ADC Lch input GND
94	OUTL	O	ADC Lch selector output
95	VRAL		ADC Lch operation amp reference potential
96	VDA		ADC input power supply
97	VRAR		ADC Rch operation amp reference potential
98	OUTR	O	ADC Rch selector output
99	GNDAR		ADC Rch input GND
100	GNDX		Crystal oscillator section GND

* PM2010A



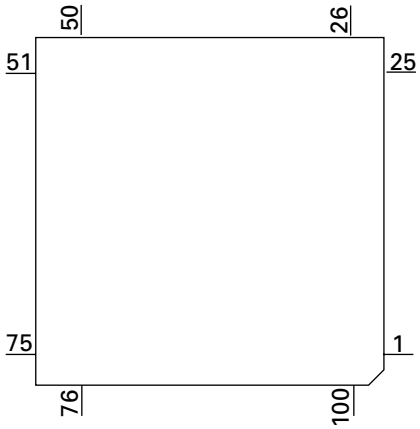
● Pin Functions (PE5370B)

Pin No.	Pin Name	I/O	Format	Function and Operation
1	BSO	O	C	P-Bus serial data output
2	$\overline{\text{BSCK}}$	I/O	/C	P-Bus serial clock input/output
3-5	NC			Not used (Open)
6	EVDD			E power supply Positive power supply
7	EVSS			E power supply GND
8-10	NC			Not used (Open)
11-13	MEMO0-2	O	C	Shock proof memory buffer quantity output 0-2
14-16	NC			Not used (Open)
17	$\overline{\text{ADENA}}$	O	C	A/D reference voltage supply control output
18	IC/VPP			IC : VSS direct connection/VPP : Pull-down
19	BRXEN	I/O	/C	P-Bus reception is possible
20	$\overline{\text{BSRQ}}$	I/O	/C	P-Bus service request demand
21	$\overline{\text{XTALEN1}}$	O	C	CD LSI 16.9344MHz oscillation permission output
22	NC			Not used (Open)
23	$\overline{\text{XRST}}$	O	C	CD LSI reset control output
24	VDCONT	O	C	VD power supply control output
25	CD3VON	O	C	CD +3.3V power supply control output
26	CONT	O	C	Servo driver power supply control output
27	$\overline{\text{XWAIT}}$	I		CD LSI wait control signal input
28	LOEJ	O	C	The direction change output of LOAD/EJECT
29	CLCONT	O	C	Driver input change output
30	CDMUTE	O	C	CD mute control output
31	$\overline{\text{RESET}}$	I		System reset input
32	XT1	I		Connected to the oscillator for subclock (connected to VSS via the resistor)
33	XT2			Connected to the oscillator for subclock (Open)
34	REGC			Connected to the capacity stabilizing output of the regulator (an electrolytic capacitor of about 1μF)
35	X2			Oscillator connection for mainclock
36	X1	I		Oscillator connection for mainclock
37	VSS			GND
38	VDD			Positive power supply (5V)
39	CLKOUT	O	C	Internal system clock output (Open)
40	$\overline{\text{XWRITE}}$	O		CD LSI write control signal output
41, 42	NC			Not used (Open)
43	$\overline{\text{XREAD}}$	O		CD LSI read control signal output
44	XASTB	O		CD LSI address strobe output
45	LOCK	I		Spindle lock input
46	NC			Not used (Open)
47-54	AD0-7	I/O	/C	Address/Data bus 0-7
55	BVDD			B power supply Positive power supply (3.3V)
56	BVSS			B power supply GND
57-64	AD8-15	I/O	/C	Address/Data bus 8-15
65	$\overline{\text{XCS}}$	O	C	CD LSI chip selection output
66	NC			Not used (Open)
67, 68	DBBWRDY0, 1	I		Connected to AVDD or AVSS via the resistor
69, 70	DBBRRDY0, 1	I		Connected to AVDD or AVSS via the resistor
71	AVDD			A power supply Positive power supply (5V)
72	AVSS			A power supply GND
73	AVREF			The reference voltage input for A/D converter
74	VDSENS			VD power supply short sense input
75	DSCSNS			Disc state sense input
76	TEMP			Temperature information sense input
77	HOME	I		Home SW sense input
78	$\overline{\text{CSENS}}$	I		Flap closing sense input
79	RFOKIN	I		RFOK input chatter count input
80-82	NC			Connected to AVDD or AVSS via the resistor
83	WMAARI	I		Connected to AVDD or AVSS via the resistor
84	TYPE_A/D	I		Connected to AVDD or AVSS via the resistor
85	$\overline{\text{TESTIN}}$	I		Chip check test program starting input

Pin No.	Pin Name	I/O	Format	Function and Operation
86	NC			Connected to EVDD or EVSS via the resistor
87	$\overline{\text{XINT}}$			CD LSI interruption signal input
88	$\overline{\text{WINT}}$			Connected to EVDD or EVSS via the resistor
89	$\overline{\text{BRST}}$	I		P-Bus reset input
90	$\overline{\text{EJSW}}$	I		Eject key input
91	4/16	I	C	DRAM 4M/16M selection (L : 4M, H : 16M)
92	NC			Open
93	CLAMP	I	C	CLAMP SW sense input
94	ROMDATA	I/O	/C	E2PROM data input/output
95	ROMCS	O	C	E2PROM chip selection output
96	ROMCK	O	C	E2PROM clock output
97	FRXD	I		For flash rewriting (received signal)
98	FTXD	O	C	For flash rewriting (transmitted signal)
99	NC			Open
100	BSI	I		P-Bus serial data input

* PE5370B

Format	Meaning
C	CMOS

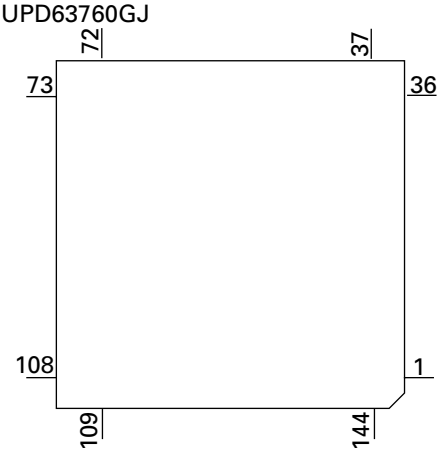


● **Pin Functions (UPD63760GJ)**

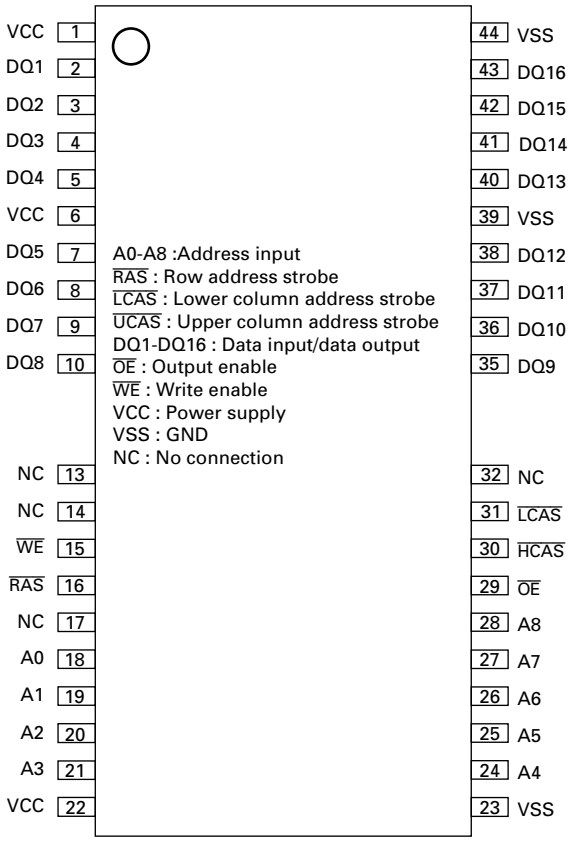
Pin No.	Pin Name	I/O	Function and Operation
1	R.GND		GND for DRAM I/F
2	$\overline{\text{RST}}$	I	Input of reset
3-7	AB12-8	I	Address bus 12-8 from the microcomputer
8-15	AD7-0	I/O	Address/data bus 7-0 to the microcomputer
16	$\overline{\text{CS}}$	I	Chip selection
17	ASTB	I	Address strobe
18	$\overline{\text{READ}}$	I	Control signals (read)
19	$\overline{\text{WRITE}}$	I	Control signals (write)
20	$\overline{\text{WAIT}}$	O	Control signals (wait)
21	INTQ		Interruption signals to the external microcomputer
22	IFMODE	I	Switching between the data buses (16bit/8bit)
23	D.VDD		Power supply for digital circuits
24	$\overline{\text{XTALEN1}}$	I	Permission to oscillate 16.9344MHz
25	$\overline{\text{XTALEN2}}$	I	Permission to oscillate 24.576MHz
26	DA.VDD		Power supply for DAC
27	ROUT	O	Output of audio for the right channel
28	DA.GND		GND for DAC
29	R+	O	Output of the right channel audio PWM
30	R-	O	Output of the right channel audio PWM
31	REGC		Connected to the capacitor for band gap
32	L-	O	Output of the left channel audio PWM
33	L+	O	Output of the left channel audio PWM
34	DA.GND		GND for DAC
35	LOUT	O	Output of audio for the left channel
36	DA.VDD		Power supply for DAC
37	X.VDD		Power supply for the crystal oscillator
38	XTAL1		Connected to the crystal oscillator (16.9344MHz)
39	$\overline{\text{XTAL1}}$		Connected to the crystal oscillator (16.9344MHz)
40, 41	X.GND		Ground for the crystal oscillator
42	$\overline{\text{XTAL2}}$		Connected to the crystal oscillator (24.576MHz)
43	XTAL2		Connected to the crystal oscillator (24.576MHz)
44	X.VDD		Power supply for the crystal oscillator
45	D.GND		GND for digital circuits
46	DIN	I	Input of audio data
47	DOUT	O	Output of audio data
48	SCKIN	I	Clock input for audio data
49	SCKO	O	Clock output for audio data
50	LRCKIN	I	Input of LRCK for audio data
51	LRCK	O	Output LRCK for audio data
52	TESTX	O	Output for tests
53	RFOK	O	Output of RFOK
54	C16M	O	Output of 16.9344MHz
55	TESTEN	I	Connected to GND
56	TEST4	I	Connected to GND
57	D.VDD		Power supply for digital circuits
58	RFCK/HOLD	O	Output of RFCK/HOLD signal
59	WFCK/MIRR	O	Output of WFCK/MIRR signal
60	PLCK	O	Output of PLCK
61	LOCK	O	Output of LOCK
62	C1D1	O	Information on error correction
63	C1D2	O	Information on error correction
64	C2D1(RMUTE)	O	Information on error correction (mute for Rch)
65	C2D2(LMUTE)	O	Information on error correction (mute for Lch)
66	C2D3	O	Information on error correction
67	D.GND		Ground for digital circuits
68	$\overline{\text{RAS}}$	O	Output of DRAM RAS
69	$\overline{\text{CAS0}}$	O	Output of DRAM Lower CAS
70	$\overline{\text{CAS1}}$	O	Output of DRAM Upper CAS
71	$\overline{\text{WE}}$	O	Output of DRAM WE
72	$\overline{\text{OE}}$	O	Output of DRAM OE

Pin No.	Pin Name	I/O	Function and Operation
73-88	RDB0-15	I/O	Input/output of DRAM Data0-15
89	D.GND		Ground for digital circuits
90-99	RA0-9	O	Output of DRAM Address0-9
100	D.VDD		Power supply for digital circuits
101-104	TEST0-3	I	Connected to GND
105	FD	O	Output of focus drive PWM
106	TD	O	Output of tracking drive PWM
107	SD	O	Output of thread drive PWM
108	MD	O	Output of spindle drive PWM
109	A.VDD		Power supply for the analog system
110	ATEST	O	Analog tests
111	EFM	O	Output of EFM signals
112	ASY	I	Input of asymmetry
113	C3T		Connection to the capacitor for detecting 3T
114	A.GND		Ground for the analog system
115	RFI	I	Input of RF
116	AGCO	O	Output of RF
117	AGCI	I	Input of AGC
118	RFO	O	Output of RF(AGC)
119, 120	EQ2, 1		Equalizer 2, 1
121	RF2-	I	Reversal input of RF2
122	RF-	I	Reversal input of RF
123	A.GND		Ground for the analog system
124	A	I	Input of A
125	C	I	Input of C
126	B	I	Input of B
127	D	I	Input of D
128	F	I	Input of F
129	E	I	Input of E
130	A.VDD		Power supply for the analog system
131	REFOUT	O	Output of reference voltage
132	REFC		Connected to the capacitor for output of REFOUT
133	FE-	I	Reversal input of FE
134	FEO	O	Output of FE
135	TE-	I	Reversal input of TE
136	TEO	O	Output of TE
137	TE2	O	TE2
138	TEC	I	TEC
139	A.GND		Ground for the analog system
140	LDREGO	O	Output of REG voltage for APC
141	PD	I	Input of PD
142	LD	O	Output of LD
143	PN	I	Assignment of pickup polarity
144	A.VDD		Power supply for the analog system

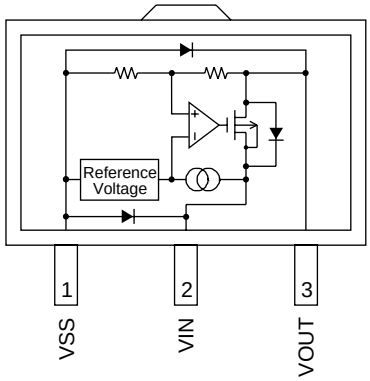
* UPD63760GJ



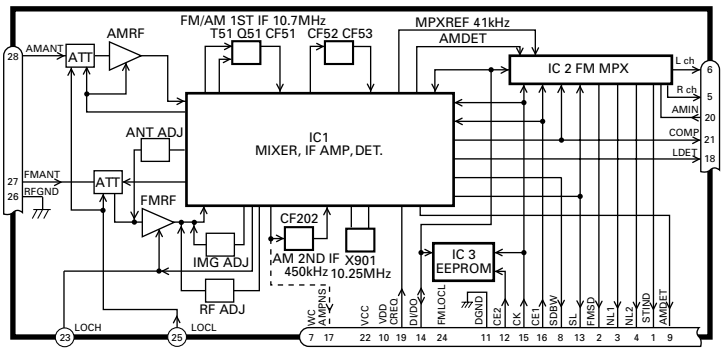
* MSM51V4265EP-70TS



* S-812C33AUA-C2N



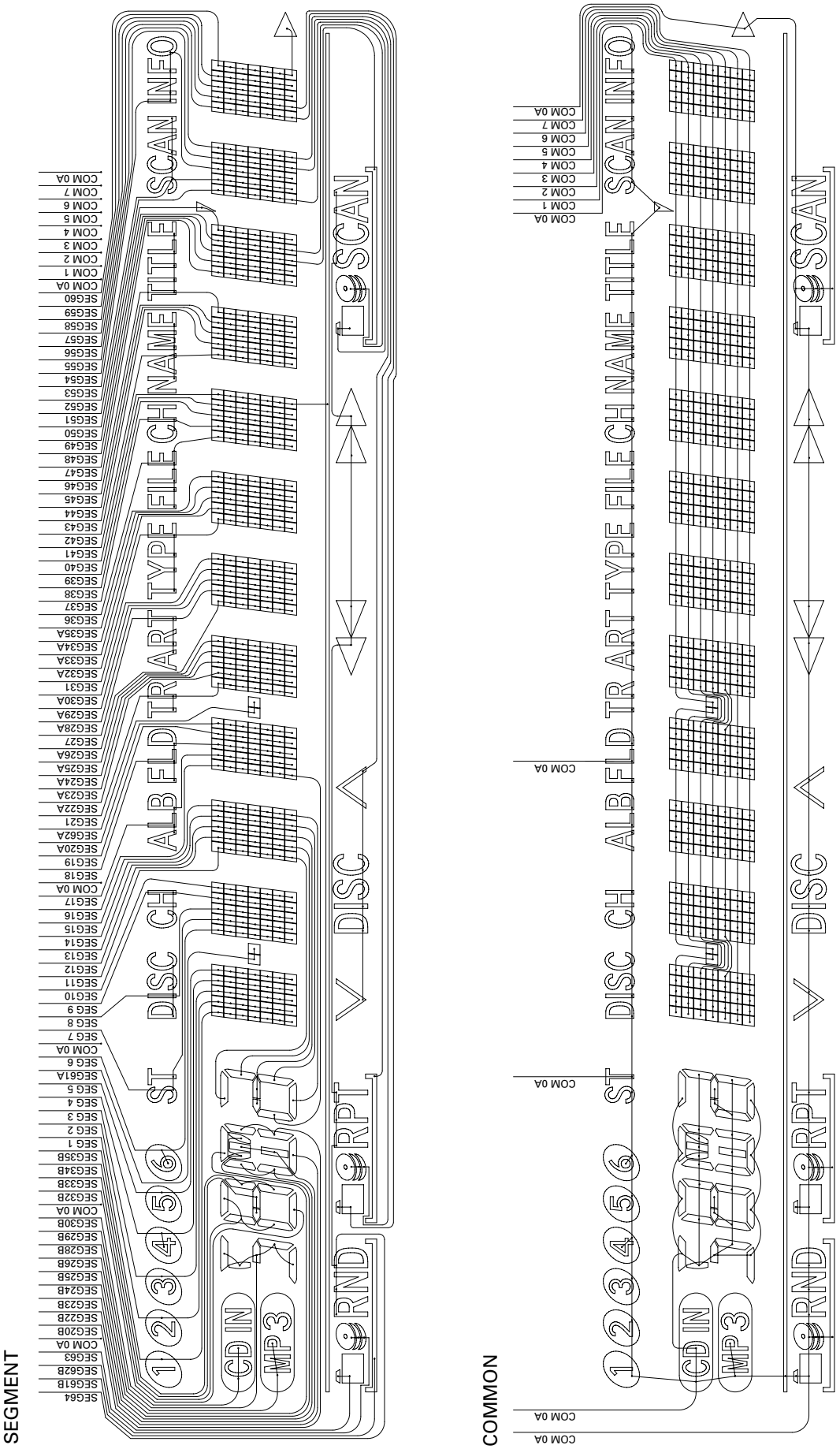
● FM/AM Tuner Unit



No.	Symbol	I/O	Explain	
1	STIND	O	stereo indicator	"Low" when the FM stereo signals are received. To be pulled up to the "VDD" at 47kΩ.
2	FMSD	O	FM station detector	"High" when signals are received. To be pulled up to the "VDD" at 47kΩ Meanwhile, 10kΩ should be used when taking diver FIX trigger from here and "High: 0.9VDD or more" and "Low: 250mV or less". (Should satisfy the diver IC specifications)
3	NL1	O	noise level-1	"High" when noise is received. Output for the RDS. GND at 47kΩ//1,800pF.
4	NL2	O	noise level-2	"High" when noise is received. Output for the RDS. GND at 36kΩ//330pF.
5	Rch	O	R channel output	FM stereo "R-ch" signal output or AM audio output. Add the specified de-emphasis constant.
6	Lch	O	L channel output	FM stereo "L-ch" signal output or AM audio output. Add the specified de-emphasis constant.
7	WC		write control	EEPROM write control. Writing permissible at "Low". Normally open.
8	SDBW	O	SD bandwidth	SD bandwidth signal output. For detection of detuning data for the RDS.
9	AMDET	O	AM detector output	AM detector output. r out < 100Ω
10	VDD		power supply	Power supply pin for the digital section. DC 5V +/- 0.25V. Be careful about overlapping noise in the logic section.
11	DGND		digital ground	Grounding for the digital section.
12	CE2	I	chip enable-2	EEPROM chip enable. Active a "Low" To be pulled up to the "VDD" at 47kΩ
13	SL	I/O	signal level	Received FM/AM signal level (strength) output. Connect the specified load resistor and capacitor (10k Ω+ 39k Ω//4,700pF)
14	DI/DO	I/O	data input/ data output	Data input/Data output To be pulled up to the "VDD" at 47kΩ
15	CK	I	clock	Clock input To be pulled up to the "VDD" at 47kΩ
16	CE1	I	chip enable-1	AF·RF chip enable. Active at "High"To be grounded at 47kΩ
17	AMPNS	O	AM PNS IF signal	IF signal output for AM PNS circuit.
18	LDET	O	lock detector	Active at "Low". To be pulled up to the "VDD" at 47kΩ
19	CREQ	I	current request	Active at "Low". To be grounded at 47kΩ
20	AMINI		AM audio input	The frequency response and the level are set by connecting an external CR network with terminal AMIN as terminal AMDET. r in = 50kΩ
21	COMP	O	composite signal	FM composite signal output. r out < 100Ω
22	VCC		power supply	Analog section power supply pin.DC 8.4V +/- 0.3V
23	LOCH	I	local high	FM local high pin. When seeking local high, apply 5V together with "LOCL".
24	FMLOCL	I	FM local low	FM local low pin. When seeking local low, apply 5V to the base of the NPN transistor with which the specified resistor is being connected to the emitter. Keep it open in case of ordinary marketed models.
25	LOCL	I	local low	FM/AM local low pin. When seeking local low, apply 5V to the base of the NPN transistor.Since this pin is exclusive for AM when the FMLOCL is in use, do not drive it under FM.
26	RFGND		RF ground	Grounding for the antenna section.
27	FMANT	I	FM antenna input	FM antenna input. 75Ω. Surge absorber (DSP-201M-S00B) is necessary.
28	AMANT	I	AM antenna input	AM antenna input. High impedance. Connect to the antenna through an L (LAU type) of 4.7μH.To cope with the power transmission line hums, insert a series circuit consisting of an L (a coil of about 100mH) + R (a resistor of 470 Ω to 2.2kΩ) between the GND.

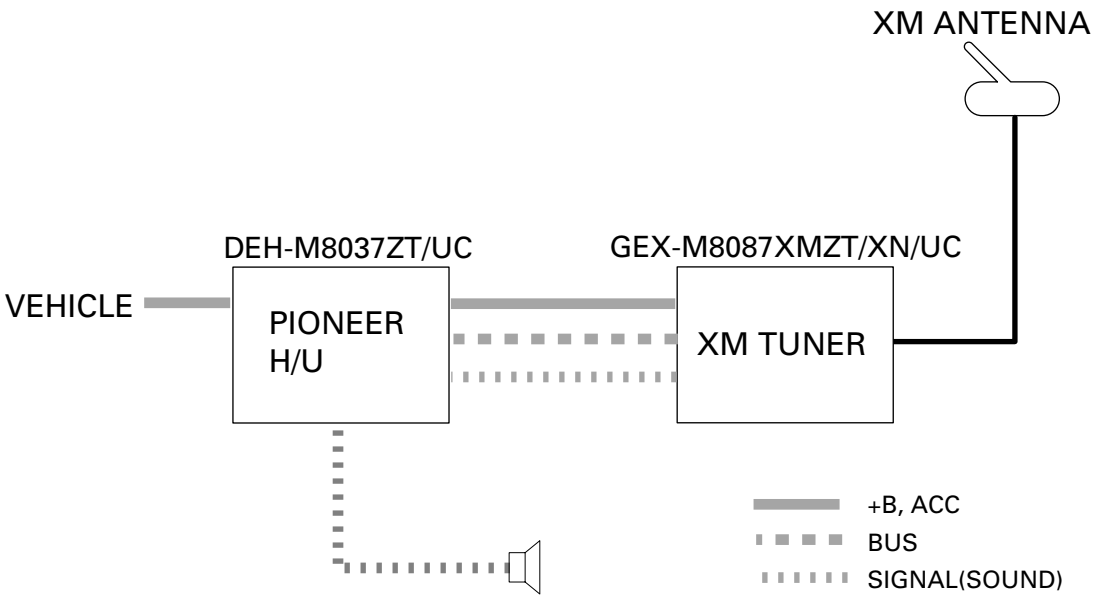
7.2.2 DISPLAY

● **LCD(CAW1809)**

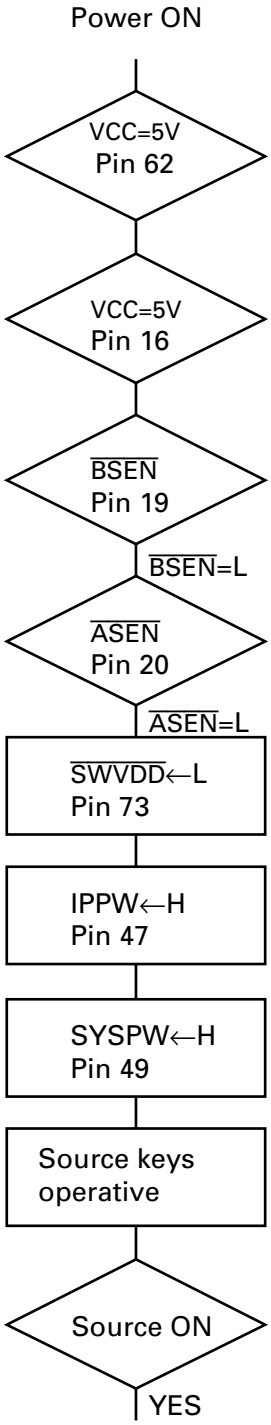


7.3 EXPLANATION

7.3.1 SYSTEM BLOCK DIAGRAM



7.3.2 OPERATIONAL FLOW CHART



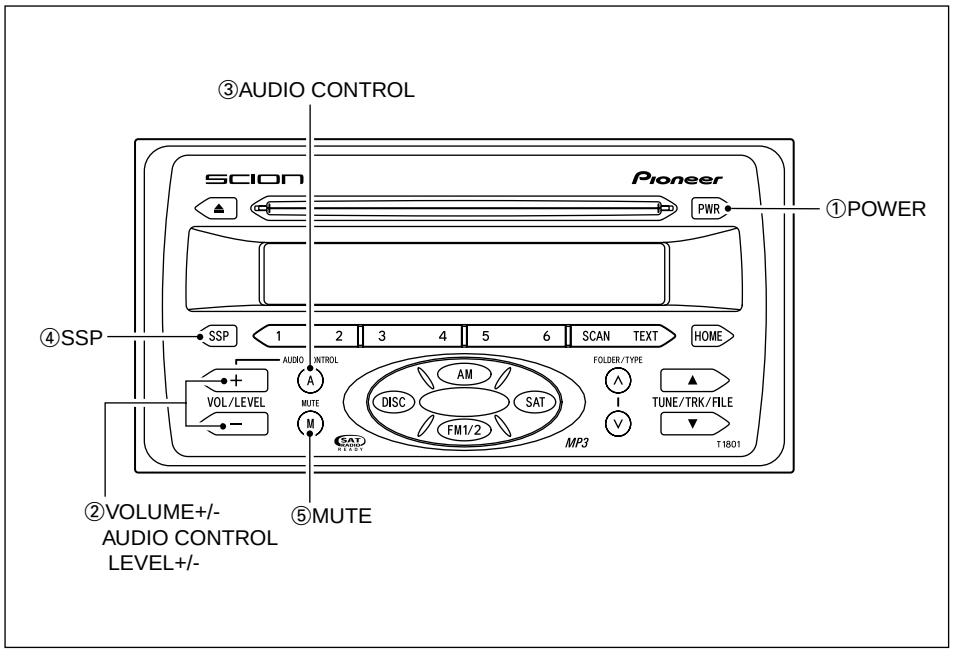
Completes power-on operation.
(After that, proceed to each source operation)

7.4 CLEANING

Before shipping out the product, be sure to clean the following portions by using the prescribed cleaning tools:

Portions to be cleaned	Cleaning tools
CD pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

8. OPERATIONS



②**SSP is an abbreviation of Scion Sound Processing.**

Basic Operation

Your audio system works when the ignition switch is in the "ACC" or "ON" position.

NOTICE
In order to prevent too much electric discharge, do not leave the car audio on longer than necessary when the engine is not running.

① PWR

Press to turn the unit on or off.

② VOLUME/LEVEL + −

When the Audio Control mode is OFF, raises / lowers volume (total volume step is 64).
When the Audio Control mode is ON, raises / lowers audio control levels.

③ AUDIO CONTROL

Press and the Audio Control mode cycles through the following order:

BAS **(Bass)** → *TRE* **(Treble)** → *FAD* **(Fader)** → *BAL* **(Balance)** → *VOL* **(volume)** → *BAS* **(Bass)**

BAS	: Adjust low-pitched tones. The display ranges from –5 to 5.
TRE	: Adjust high-pitched tones. The display ranges from –5 to 5.
FAD	: Adjust the sound balance between the rear and front speakers. The dis play ranges from –R7 to –F7.
BAL	: Adjust the sound balance between the left and right speakers. The dis play ranges from –L7 to –R7

④ SSP (Scion Sound Processing)

SSP is a modified DSP (Digital Signal Processing) system that provides a customized sound for your vehicle. You can select from the modes below.

SSP Neutral	: A subdued sound that does not interfere with conversations.
SSP Hear	: A powerful, energetic, "live" sound.
SSP Feel	: Player sound — reproduces the sound on the stage that musicians hear.

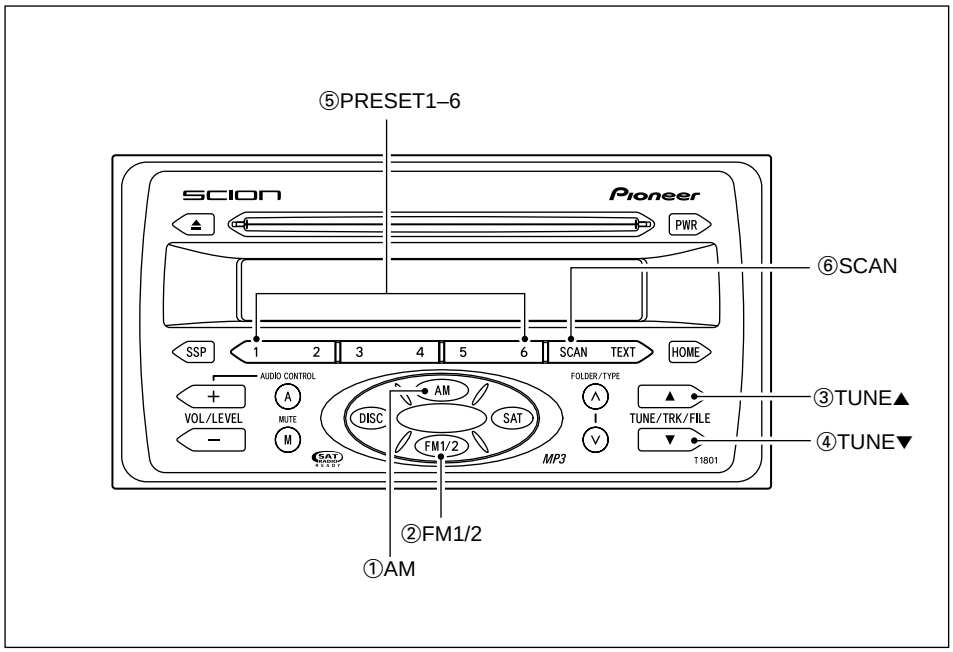
For more details, please visit the SCION Web site at http://www.scion.com/ .

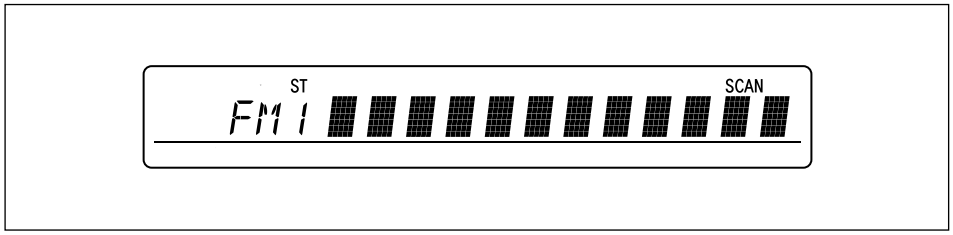
Each time you press it, the SSP changes in the following order:

SSP Neutral → *SSP Hear* → *SSP Feel* → *SSP Neutral*

⑤ MUTE

To reduce the volume instantaneously, press the MUTE button. *MUTE* will flash on and off.
To cancel this mode, press the MUTE button again.





④ TUNE▼ <DOWN>

Press to manually select (one step at a time) the station with the next lower frequency.
Press and hold until you hear a beep, and automatic station selection begins to select stations in order of decreasing frequency.

⑤ PRESET 1-6

Press to recall previously memorized stations (Preset Channels).
Press and hold until you hear a beep, and the station you are currently tuned to is memorized as a Preset Channel.

NOTICE
You can store up to 6 stations per band.

⑥ SCAN

If you press, **SCAN** is indicated in the display and SCAN begins searching for stations with good reception.
If you press and hold until you hear a beep, **SCAN** is indicated in the display and SCAN of preset channels begins.

Listening to the RADIO

NOTICE
Attaching any film or window tint film (especially conductive or metallic type) on the rear glass will noticeably reduce the sensitivity of the radio. *The car with a pole antenna is object outside.

① AM

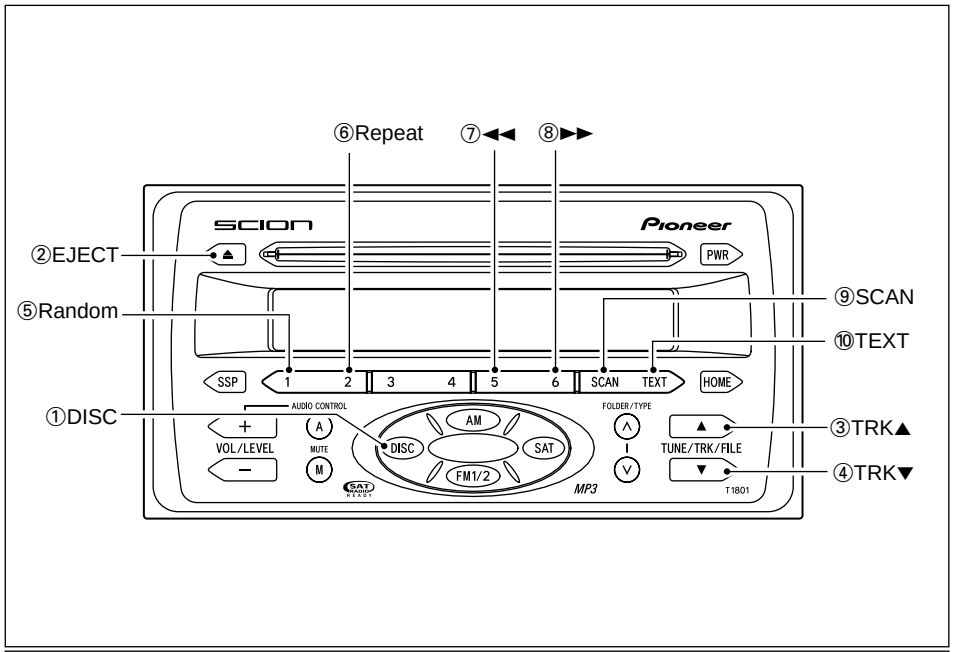
Switches to the AM mode.

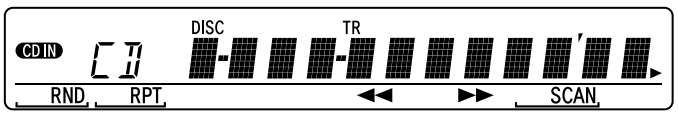
② FM1/2

Switches between FM1/2 modes.

③ TUNE▲<UP>

Press to manually select (one step at a time) the station with the next higher frequency.
Press and hold until you hear a beep, and automatic station selection begins to select stations in order of increasing frequency.





① DISC
Switches to the CD mode. (Only effective if a disc is loaded)

② EJECT
Press to eject the disc currently playing.

③ TRK▲<UP>
Press to proceed to the next track.

④ TRK▼ <DOWN>
Pressing once takes you back to the start of the track currently playing. Continuing to press takes you back one track at a time.

⑤ PRESET 1 (Random)
If you press this, ——— is indicated in the display and starts to play tracks on the disc being played in random order. Press again to cancel.
"RND" is always displayed regardless of this operation.

⑥ PRESET 2 (Repeat)
If you press this, ——— is indicated in the display and starts to repeat the track being played. Press again to cancel.
"RPT" is always displayed regardless of this operation.

⑦ PRESET 5 (◄◄)
While this is pressed, play of the track is reversed.

⑧ PRESET 6 (►►)
While this is pressed, play of the track is fast forwarded.

⑨ SCAN
If you press this, ——— is indicated in the display and starts to play the first 10 seconds of each track on the CD being played. Press again to cancel.
"SCAN" is always displayed regardless of this operation.

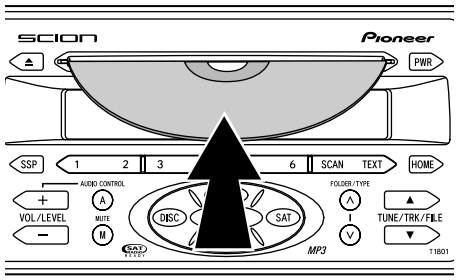
⑩ TEXT
Press, and display indications change as follows:
ELAPSED TIME → DISC TITLE → TR TITLE (track title)
If you press and hold until hear a beep, the page of a display can be changed. A maximum of 2 pages (24 characters) title can be displayed.

Listening to a CD

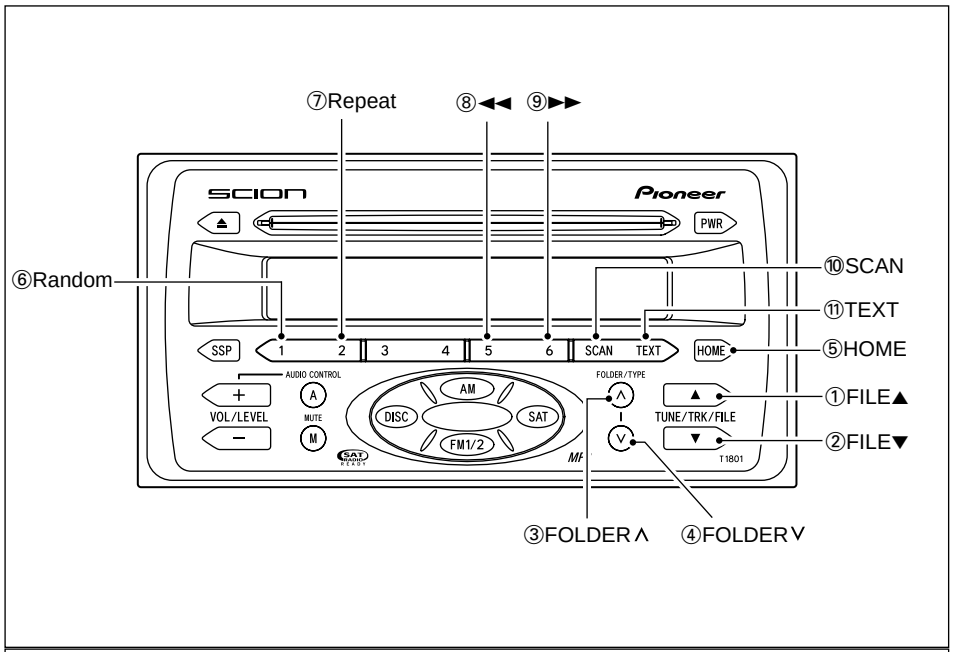
NOTICE
- Never try to disassemble or oil any part of the compact disc player. Do not insert anything except a compact disc into the slot.
- You can load an 8 cm disc without using an adaptor. Never use an adaptor.

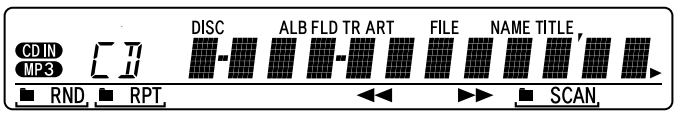
Load a CD in the CD slot.

(CD IN lights.)



⚠CAUTION
Compact disc players use an invisible laser beam which could cause hazardous radiation exposure if directed outside the unit. Be sure to operate the player correctly.





⑥ PRESET 1 (Random)

If you press this, ——— is indicated in the display and starts to play files in the folder being played in random order. Press again to cancel.
If you press and hold until you hear a beep, ■———, is indicated in the display and starts to play files in all folders on the disc being played in random order. Press again to cancel.
"RND" is always displayed regardless of this operation.

⑦ PRESET 2 (Repeat)

If you press this, ——— is indicated in the display and starts to repeat the file being played. Press again to cancel.
If you press and hold until you hear a beep, ■———, is indicated in the display and starts to repeat the folder being played. Press again to cancel.
"RPT" is always displayed regardless of this operation.

⑧ PRESET 5 (◄◄)

While this is pressed, play of the track is reversed. (There is no sound.)

⑨ PRESET 6 (►►)

While this is pressed, play of the track is fast forwarded. (There is no sound.)

⑩ SCAN

If you press this, ——— is indicated in the display and starts to play the first 10 seconds of each file in the folder being played. Press again to cancel.
If you press and hold until you hear a beep, ■———, is indicated in the display and starts to play the first 10 seconds of the first file of each folder. Press again to cancel.
"SCAN" is always displayed regardless of this operation.

⑪ TEXT

Press and display indications change as follows:
ELAPSED TIME → FLD NAME (Folder name) → FILE NAME → ALB TITLE (Album Title) → TR TITLE (Track Title) → ART NAME (Artist Name)
If you press and hold until hear a beep, the page of a display can be changed. A maximum of 2 pages (24 characters) title can be displayed.

Listening to a MP3 DISC

If you select a MP3 disc, MP3 is indicated in the display.

① FILE ▲<UP>

Press to proceed to the next file.

② FILE ▼<DOWN>

Pressing once takes you back to the start of the file currently playing. Continuing to press takes you one file back at a time.

③ FOLDER ∧ <UP>

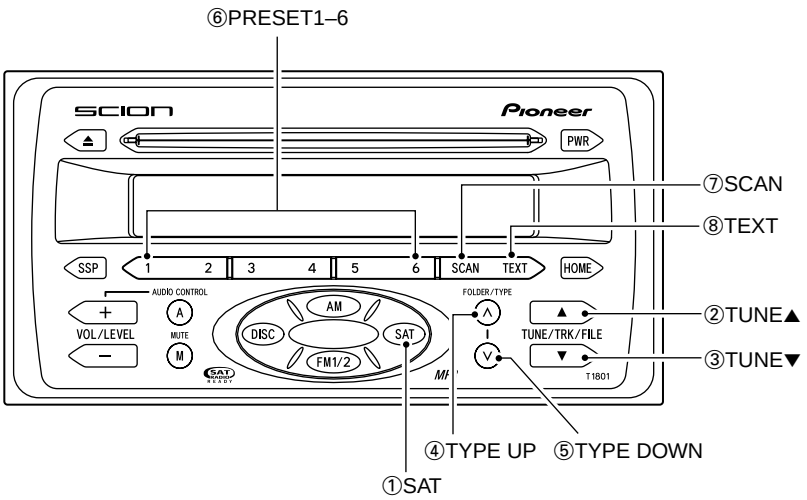
Press to proceed to the next folder. (While playing a CD that includes MP3 files, press and hold to switch between CD-DA and MP3 files.

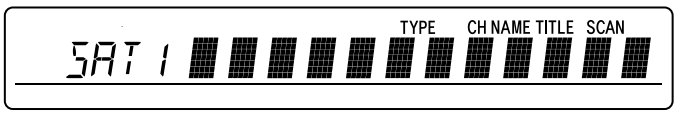
④ FOLDER ∨ <DOWN>

Press to return to the previous folder.

⑤ HOME

Press to jump to HOME.





④ TYPE <UP>

Press to see Channel Category of channel that is currently received.
When Channel Category is displayed (**TYPE** is indicated), press again to switch to the next category.

⑤ TYPE <DOWN>

Press to see Channel Category of channel that is currently received.
When Channel Category is displayed (**TYPE** is indicated), press again to switch to the previous category.

⑥ PRESET 1-6

Press to recall previously memorized channels (Preset Channels).
Press and hold until you hear a beep, and the channel you are currently receiving will be memorized as a Preset Channel.

NOTICE
You can store up to 6 channels per band.

⑦ SCAN

Press and SCAN of the currently selected type (Channel Category) starts. At this time, **SCAN** is indicated in the display.
If you press and hold until you hear a beep, SCAN of preset channels starts.
Also at this time, **SCAN** is indicated in the display.

⑧ TEXT

Press and indication in the display changes as follows:
CH NAME → TITLE (SONG/PROGRAM TITLE) → NAME (ARTIST NAME/FEATURE) → CH NUMBER → CH NAME →

NOTICE
About the display Up to a maximum of 10 alphanumeric characters can be displayed. (Some information will not be fully displayed.)

Listening to a XM Satellite Radio broadcast

① SAT

Switches between the SAT 1/2/3 modes.

② TUNE <UP>

Pressing this lets you select the next higher channel.
If you press and hold, you can rapidly scroll forward through the channels.
While displaying Channel Category by TYPE UP/DOWN, pressing this lets you select upward the next channel within currently selected type (Channel Category).

③ TUNE <DOWN>

Pressing this lets you select the previous channel.
If you press and hold, you can rapidly scroll down through the channels.
While displaying Channel Category by TYPE UP/DOWN, pressing this lets you select downward the next channel within currently selected type (Channel Category).

SATELLITE RADIO

SATELLITE RADIO

Pioneer sound.vision.soul

Service Manual

ORDER NO.
CRT3026

CD MECHANISM MODULE(S10MP3)

CX-3057

- **This service manual describes the operation of the CD mechanism module incorporated in models listed in the table below.**
- **When performing repairs use this manual together with the specific manual for model under repair.**

Model	Service Manual	CD Mechanism Module
DEH-P450MP/XM/UC DEH-P4500MP/XM/UC DEH-P3550MP/XM/ES	CRT3019	CXK5660
DEH-P3500MP/XM/EW	CRT3020	
DEH-P550MP/XN/UC DEH-P5500MP/XN/UC DEH-P5550MP/XN/ES	CRT3002	CXK5661
DEH-P5530MP/XN/EW DEH-P5500MP/XN/EW	CRT3003	

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PIONEER CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS (USA) INC. P.O.Box 1760, Long Beach, CA 90801-1760 U.S.A.
PIONEER EUROPE NV Haven 1087 Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE.LTD. 253 Alexandra Road, #04-01, Singapore 159936

K-ZZA. FEB. 2003 Printed in Japan

1. CIRCUIT DESCRIPTIONS

Recently, most CD LSI's have included DAC, RF amplifier and other peripheral circuits, as well as the core circuit DSP. This series of mechanisms employ a multi-task LSI UPD63760GJ, which has CD-ROM decoder and MP3 decoder in addition to the CD block as shown in the Fig.1.0.1. This enables to reproduce a CD-ROM where MP3 data is recorded.

Plus, in this lineup, there are WMA supported models available where WMA decoder UPD61002GC is added.
CXK5660 --- WMA non-supported
CXK5661 --- WMA supported

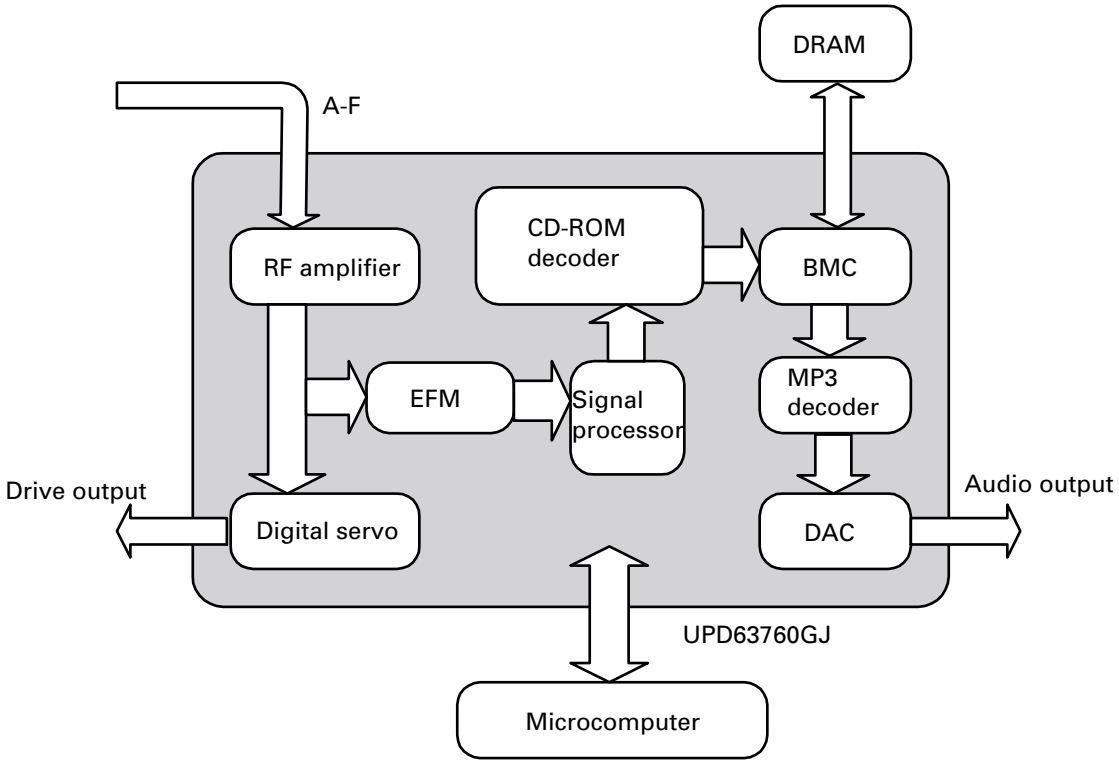


Fig.1.0.1 Block diagram of CD LSI UPD63760GJ

1.1 PREAMPLIFIER BLOCK (UPD63760GJ: IC201)

In the preamplifier block, the pickup output signals are processed to generate signals that are used for the next-stage blocks: the servo block, demodulator, and control.

After I/V-converted by the preamplifier with built-in photo detectors (inside the pickup), the signals are applied to the preamplifier block in the CD LSI UPD63760GJ (IC201). After added by the RF amplifier in this block, these signals are used to produce necessary signals such as RF, FE, TE, and TE zero-cross signals.

The CD LSI employs a single power supply system of + 3.3V. Therefore, the REFO (1.65V) is used as the reference voltage both for this CD LSI and the pickup. The LSI produces the REFO signal by using the REFOUT via the buffer amplifier and outputs from the pin 131. All the measurements should be made based on this REFO.

Caution: Be careful not to short the REFO and GRD when measuring.

1.1.1 APC (Automatic Power Control)

A laser diode has extremely negative temperature characteristics in optical output at constant-current drive. To keep the output constant, the LD current is controlled by monitor diodes. This is called the APC circuit. The LD current is calculated at about 30mA, which is the voltage between LD1 and V3R3D divided by 7.5 (ohms).

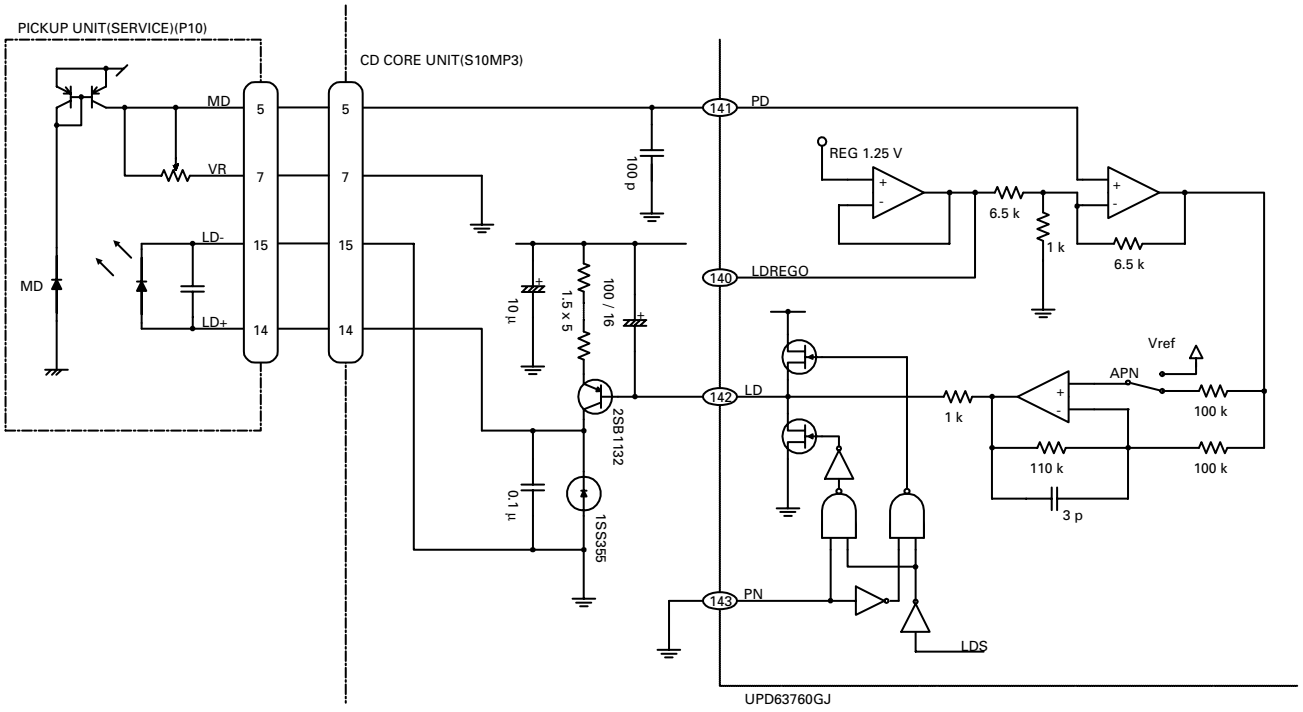


Fig. 1.1.1 APC

1.1.2 RF and RFAGC amplifiers

The photo-detector outputs (A + C) and (B + D) are added, amplified, and equalized inside this LSI, and then provided as the RF signal from the RFI terminal. The RF signal can be used for eye-pattern check.

The low frequency component of the RFO voltage is:

RFO = (A + B + C + D) x 2

The RFO is used for the FOK generation circuit and RF offset adjustment circuit.

The RFI output from the pin 118 is A/C-coupled outside this LSI, and returned to the pin 117 of this LSI. The signal is amplified in the RFAGC amplifier to obtain the RFAGC signal. This LSI is equipped with the RFAGC auto-adjustment function as explained below. This function automatically controls the RFO level to keep at 1.5V by switching the feed-back gain for the RFAGC amplifier.

The RFO signal is also used for the EFM, DFCT, MIRR, and RFAGC auto-adjustment circuits.

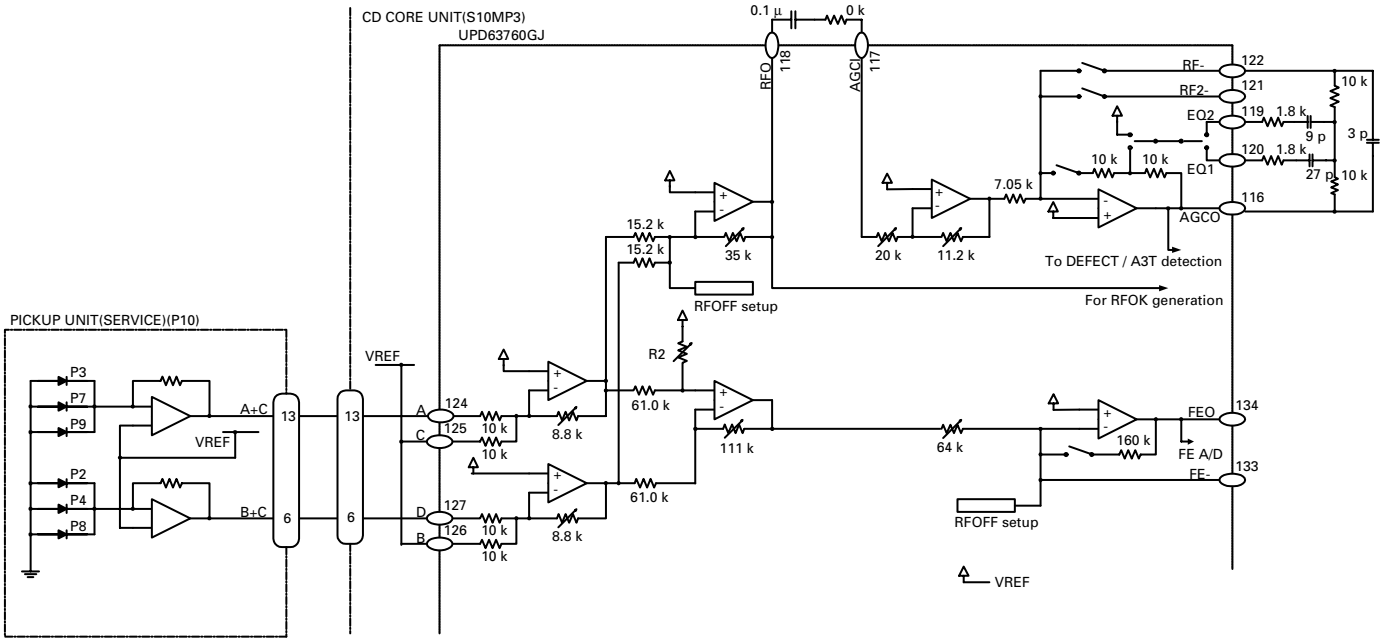


Fig. 1.1.2 RF/AGC/FE

1.1.3 Focus error amplifier

The photo-detector outputs (A + C) and (B + D) are applied to the differential amplifier and the error amplifier to obtain the (A + C - B - D) signal, which is then provided from the pin 91 as the FE signal.
The low frequency component of the FE voltage is:
FE = (A + C - B - D) x 8.8/10k x 111k/61k x 160k/64k
= (A + C - B - D) x 6.0
The FE output shows 1.5Vp-p S-shaped curve based on the REFO. For the next-stage amplifiers, the cutoff frequency is 14.6kHz.

1.1.4 RFOK

The RFOK circuit generates the RFOK signal, which indicates focus-close timing and focus-close status during the play mode, and outputs from the pin 53. This signal is shifted to "H" when the focus is closed and during the play mode.
The DC level of the RFI signal is peak-held in the digital block and compared with a certain threshold level to generate the RFOK signal. Therefore, even on a non-pit area or a mirror-surface area of a disc, the RFOK becomes "H" and the focus is closed.
This RFOK signal is also applied to the microcomputer via the low-pass filer as the FOK signal, which is used for protection and RF amplifier gain switching.

1.1.5 Tracking error amplifier

The photo-detector outputs E and F are applied to the differential amplifier and the error amplifier to obtain the (E - F) signal, and then provided from the pin 136 as the TE signal.
The low frequency component of the TE voltage is:
TEO = (E - F) x 160k/112k x 81k/45.4k x 160k/80k
= (E - F) x 5.1
The TE output provides the TE waveform of about 1.3Vp-p based on the REFO. For the next-stage amplifiers, the cutoff frequency is 21.1kHz.

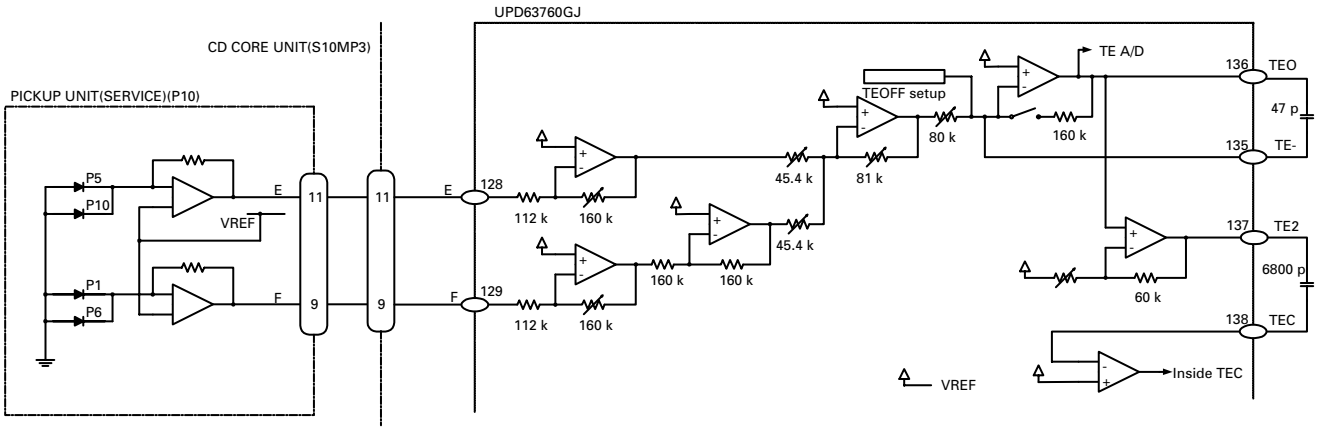


Fig. 1.1.3 TE

1.1.6 Tracking zero-cross amplifier

The tracking zero-cross signal (hereinafter TEC signal) is obtained by amplifying the TE signal 4 times, and used to detect the tracking-error zero-cross point.

By using the information on this point, the following two operations can be performed:

1. Track counting in the carriage move and track jump modes
2. Sensing the lens-moving direction at the moment of the tracking close (The sensing result is used for the tracking brake circuit as explained below.)

The frequency range of the TEC signal is between 300Hz and 20kHz.

TEC voltage = TE level x 4

The TEC level can be calculated at 5.2V. This level exceeds the D range of the operational amplifier, and the signal gets clipped. However, it can be ignored because the CD LSI only uses the signal at the zero-cross point.

1.1.7 EFM

The EFM circuit converts the RF signal into a digital signal expressed in binary digits 0 and 1. The AGCO output from the pin 116 is A/C-coupled in the peripheral circuit, fed back to the LSI from the pin 115, and sent to the EFM circuit inside the LSI.

On scratched or dirty discs, part of the RF signal recorded may be missing. On other discs, part of the RF signal recorded may be asymmetric, which was caused by dispersion in production quality. Such lack of information cannot be completely eliminated by this AC coupling process. Therefore, by utilizing the fifty-fifty occurrence ratio of binary digits (0 and 1) in the EFM signal, the EFM comparator reference voltage ASY is controlled, so that the comparator level always stays around the center of the RFO signal. The reference voltage ASY is made from the EFM comparator output via the low-pass filter. The EFM signal is put out from the pin 111.

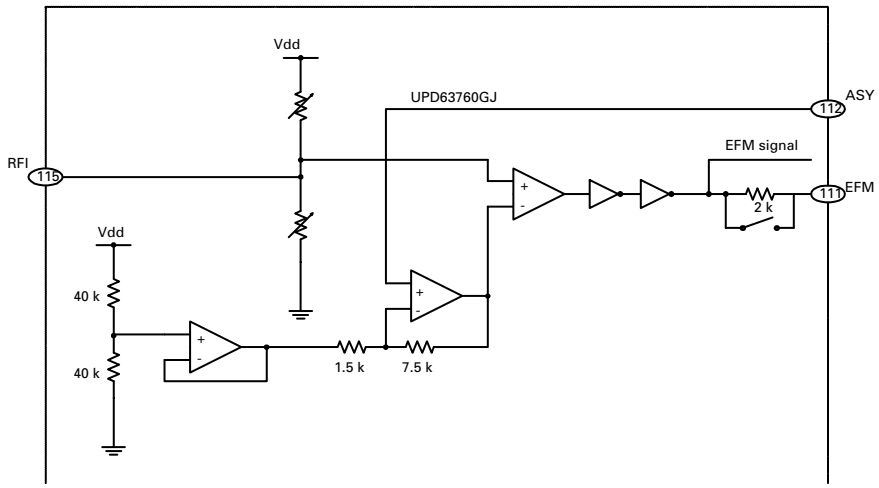


Fig. 1.1.4 EFM

1.2 SERVO BLOCK (UPD63760GJ: IC201)

The servo block controls the servo systems for error signal equalizing, in-focus, track jump and carriage move and so on. The DSP block is a signal-processing block, where data decoding, error correction, and compensation are performed.

After A/D-converted, the FE and TE signals (generated in the preamplifier block) are applied to the servo block and used to generate the drive signals for the focus, tracking, and carriage servos.

The EFM signal is decoded in the DSP block, and finally sent out as the audio signal after D/A-converted. In this decoding process, the spindle servo error signal is generated, supplied to the spindle servo block, and used to generate the spindle drive signal.

The drive signals for focus, tracking, carriage, and spindle servos (FD, TD, SD, and MD) are provided as PWM3 data, and then converted to the analog data by the low-pass filter which uses the operational amplifier embedded in the driver IC BA5996FM (IC301). These analog drive signals can be monitored by the FIN, TIN, CIN, and SIN signals respectively. Afterwards, the signals are amplified and applied to each servo's actuator and motor.

1.2.1 Focus servo system

In the focus servo system, the digital equalizer block works as its main equalizer. The figure 1.2.1 shows the block diagram of the focus servo system.

To close the focus loop circuit, the lens should be moved to within the in-focus range. While moving the lens up and down by using the focus search triangular signal, the system tries to find the in-focus point. In the meantime, the spindle motor rotation is kept at the prescribed one by using the kick mode.

The servo LSI monitors the FE and RFOK signals and automatically performs the focus close operations at an appropriate timing. The focus loop will close when the following three conditions are satisfied at the same time:

1) The lens moves toward the disc surface.
2) The RFOK signal is shifted to "H".
3) The FE signal is zero-crossed. At last, the FE signal comes to the zero level (or REFO).

When the focus loop is closed, the FSS bit is shifted from "H" to "L". The microcomputer starts monitoring the RFOK signal obtained through the low-pass filter 10msec after that.

If the RFOK signal is detected as "L", the microcomputer will take several actions including protection.

The timing chart for focus close operations is shown in fig. 1.2.2.

In the test mode, the S-shaped curve, search voltage, and actual lens movement can be confirmed by pressing the focus close button when the focus mode selector displays 01.

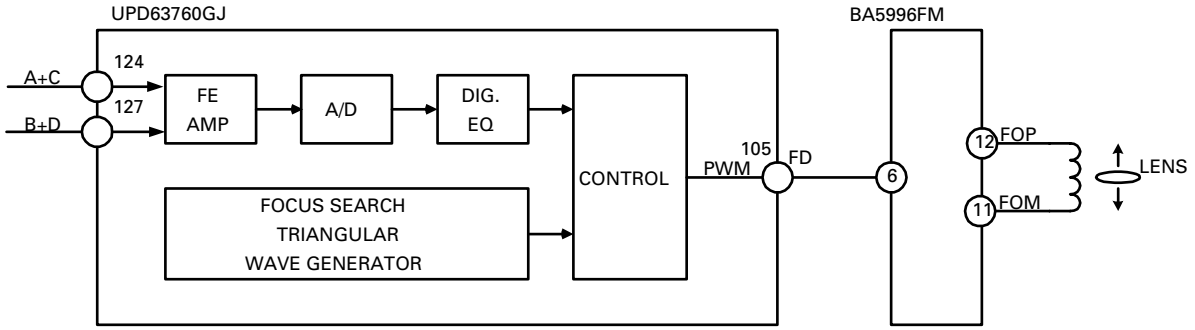


Fig. 1.2.1 Block diagram of the focus servo system

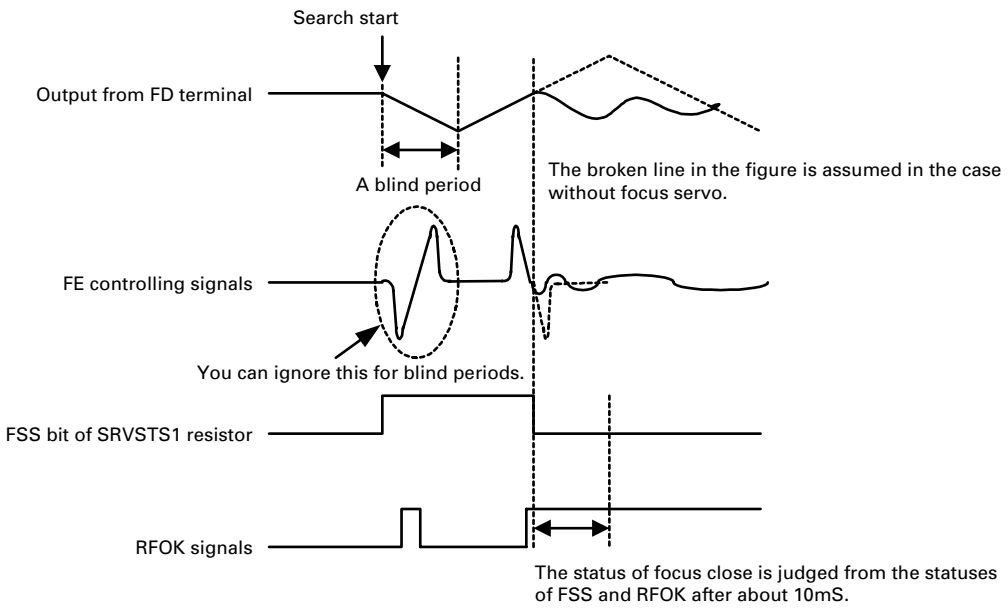


Fig. 1.2.2 Timing chart for focus close operations

1.2.2 Tracking servo system

In the tracking servo system, the digital equalizer block is used as its main equalizer. The figure 1.2.3 shows the block diagram of the tracking servo system.

(a) Track jump

Track jump operation is automatically performed by the auto-sequence function inside the LSI with a command from the microcomputer. In the search mode, the following five track jump modes are available: 1, 4, 10, 32, and 32*3

In the test mode, 1, 32, and 32*3 track jump modes, and carriage move mode are available and can be switched by selecting the mode.

For track jumps, first, the microcomputer sets about half the number of tracks to be jumped as the target. (Ex. For 10 track jumps, it should be 5 or so.) Using the TEC signal, the microcomputer counts up tracks. When the counter reaches the target set by the microcomputer, a brake pulse is sent out to stop the lens. The pulse width is determined by the microcomputer. Then, the system closes the tracking loop and proceeds to the normal play. At this moment, to make it easier to close the tracking loop, the brake circuit is kept ON for 50msec after the brake pulse, and the tracking servo gain is increased.

In the normal operation mode, the FF/REW operation is realized by continuously repeating single jumps about 10 times faster than the normal single jump operation.

(b) Brake circuit

The brake circuit stabilizes the servo-loop close operation even under poor conditions, especially in the setting-up mode or track jump mode. This circuit detects the lens-moving direction and emits only the drive signal for the opposite direction to slow down the lens. Thus, this makes it easier to close the tracking servo loop. The off-track direction is detected from the phases of the TEC and MIRR signals.

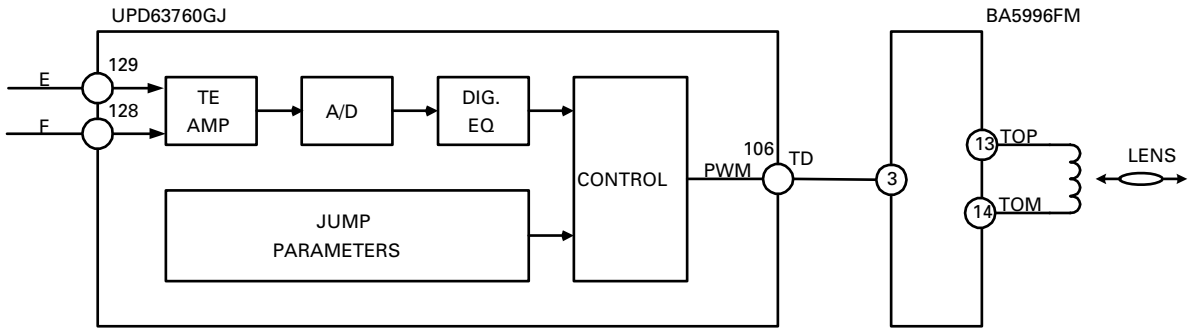


Fig. 1.2.3 Block diagram of the tracking servo system

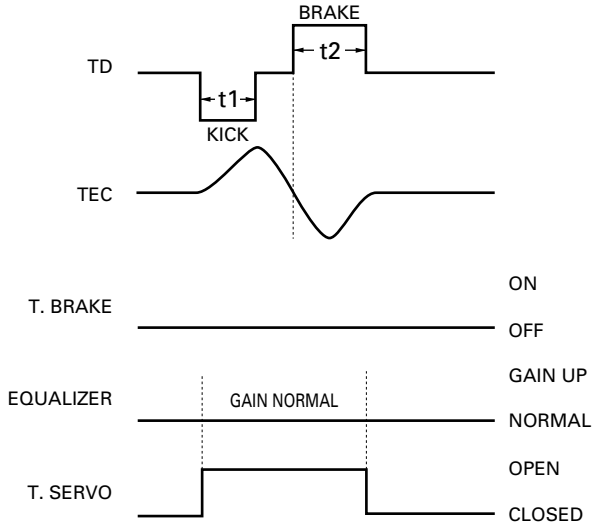


Fig. 1.2.4 Single-track jump

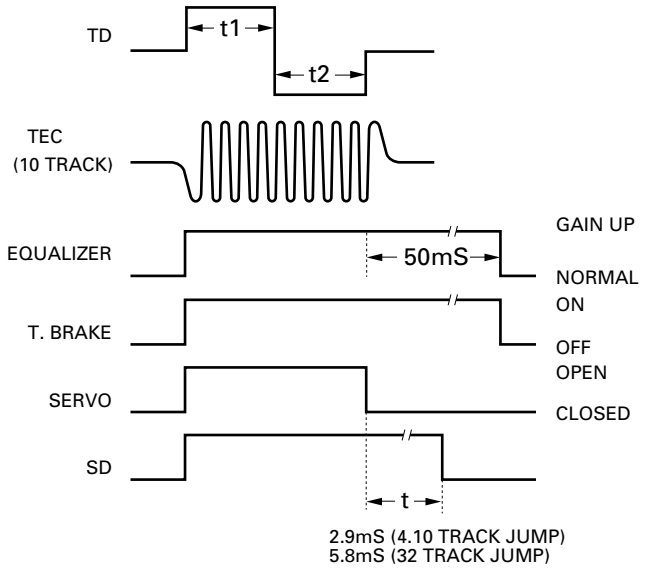
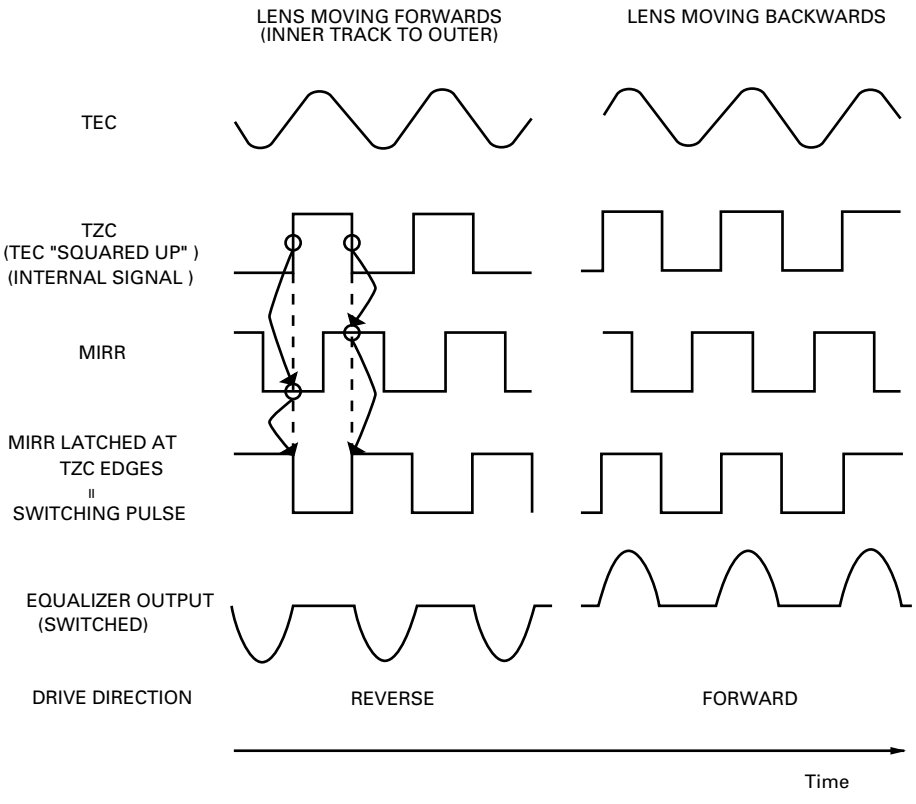


Fig. 1.2.5 Multi-track jump



Note : Equalizer output assumed to hava same phase as TEC.

Fig. 1.2.6 Track brake

1.2.3 Carriage servo system

In the carriage servo system, the low frequency component from the tracking equalizer (the information on the lens position) is transferred to the carriage equalizer, where the gain is increased to a certain level, and then sent out from the LSI as the carriage drive signal. This signal is applied to the carriage motor via the driver IC.

During the play mode, when the lens offset reaches a certain level, it is necessary to move the pickup toward the FORWARD direction. The equalizer gain is adjusted so that the output over the carriage motor starting voltage is sent out in such a case. In actual operations, only when the equalizer output exceeds the threshold level preset in the servo LSI, the drive signal is sent out. This can reduce the consumption power.

With an eccentric disc loaded, before the whole pickup starts moving, the equalizer output may exceed the threshold level a few times. In this case, the drive signal applied from the LSI shows pulse-like waveforms.

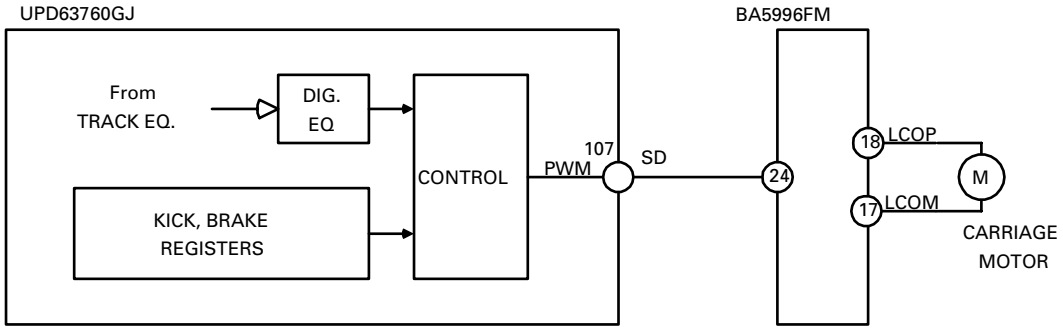


Fig. 1.2.7 Block diagram for the carriage servo block

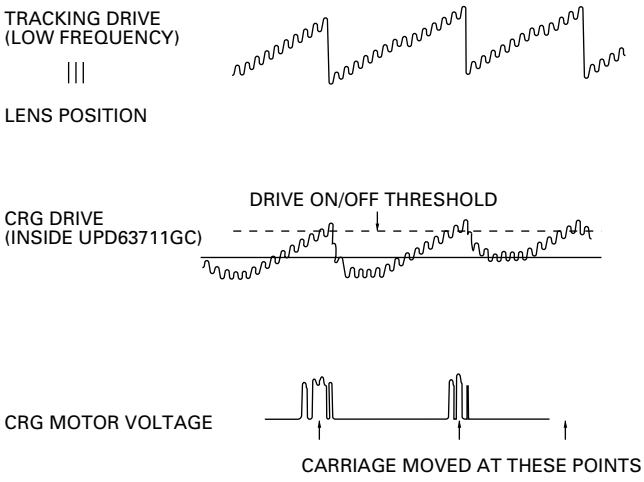


Fig. 1.2.8 Waveforms of the carriage signal

1.2.4 Spindle servo system

In the spindle servo system, the following seven modes are available:

1) Kick

Used to accelerate the disc rotation in the setting-up mode.

2) Offset

a. Used in the setting-up mode until the AGC completes after the kick mode.

b. Used when the focus loop is unlocked during the play mode and until it is locked again.

In both cases, the mode is to keep the disc rotation near to the appropriate one.

3) Applicable servo

In the normal operation, the CLV servo mode is used.

The EFM demodulation block detects through WFCK/16 sampling whether or not the frame sync signal and the internal frame counter output are synchronized, and generates the status signal based on the sampling result, synchronized or non-synchronized. If eight consecutive "non-sync" signals are obtained, the system senses the status as "non-sync". If not, the system senses as "sync". In the applicable servo mode, the leading-in servo mode is automatically selected at the non-sync status, and the normal servo mode is at the sync status.

4) Brake

Used to stop the spindle motor.

In accordance with the microcomputer's command, the brake voltage is sent out from the servo LSI. At this moment, the EFM waveform is being monitored in this LSI. When the longest EFM pattern exceeds a certain cycle (or the rotation slows down enough), a flag is set inside the LSI, and the microcomputer switches off the brake voltage. If a flag is not set within a certain period, the microcomputer shifts the mode from the brake mode to the stop mode, and keeps this for a certain period. In the eject mode, after the mode is shifted to the stop mode and a certain period passes, the loaded disc is ejected.

5) Stop

Used when the power is turned on and during the eject mode. At this moment, the voltage through the spindle motor is 0V.

6) Rough servo

Used when the carriage is moved (or in the carriage move mode such as long search).

By obtaining the linear velocity from the EFM waveform, "H" or "L" is applied to the spindle equalizer. In the test mode, this mode is used for grating confirmation.

7) Rotation speed

CD-DA and CD-ROM are controlled differently at their rotation speeds. Both of them are done by the double speed in the setting-up mode when a disc gets inserted. However, CD-DA is done by the standard speed in the setting-up mode starting from SOURCE ON/ACC ON with the disc inside, while CD-ROM is still done by the double speed. During the play mode, the rotation speed of CD-DA is always the standard speed, while that of CD-ROM is always the double speed.

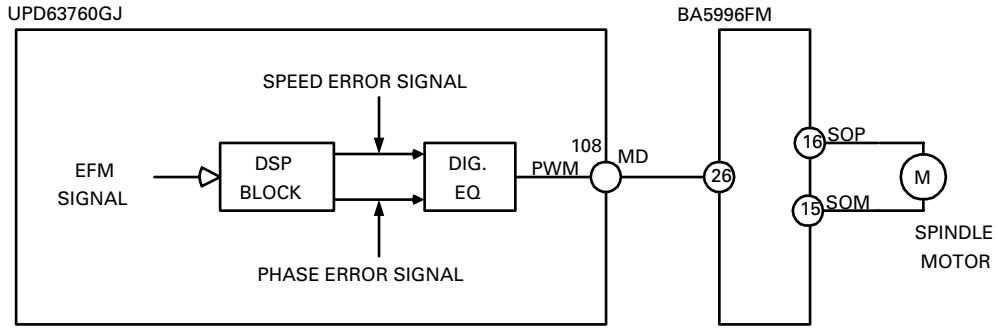


Fig.1.2.9 Block diagram of the spindle servo system

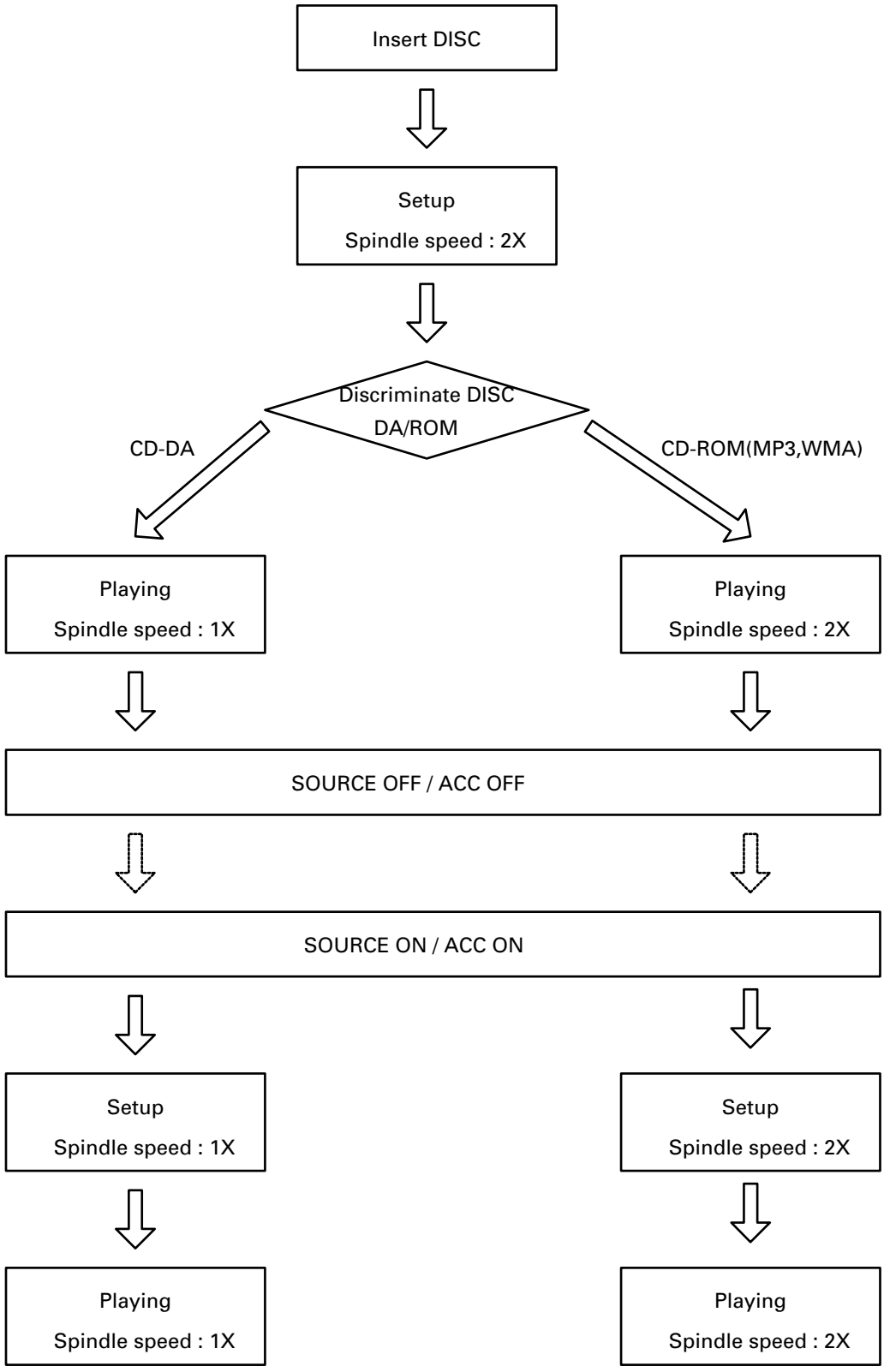


Fig.1.2.10 Dual spindle drive(x1 / x2)

1.3 AUTOMATIC ADJUSTMENT FUNCTION

This system automatically handles the circuit adjustment inside the CD LSI. All adjustments are performed whenever a disc is inserted or the CD mode is selected by pressing the source key. Each adjustment will be explained below.

1.3.1 TE, FE, and RF offset auto-adjustment

This adjustment is made to adjust the offsets of the TE, FE, and RF amplifiers in the preamplifier block to their target values on the basis of the REFO when the power is turned on. (The target values for TE, FE, and RE offsets are 0V, 0V, and -0.8V respectively.)

<Adjusting procedures>

1) With the LD OFF status, the microcomputer reads each offset through the servo LSI.
2) The microcomputer calculates the voltages for correction from the measured values, and inputs the calculated results as the offset adjustment values.

1.3.2 Tracking balance (T.BAL) auto-adjustment

This adjustment is to equalize the pickup output offsets for E-ch and F-ch by changing the amplifier gain inside the LSI. Actually, the gain is adjusted so that the TE waveform becomes symmetrical on each side of the REFO.

<Adjusting procedures>

1) The focus loop is closed.
2) The lens is kicked in the radial direction to make certain that the TE waveform is generated.
3) The microcomputer reads the TE offset calculated in the LSI through the servo LSI.
4) The microcomputer takes either of the following steps depending on the calculated offset:

• When the offset is 0, the adjustment completes.
• When the offset is positive or negative, the amp gains for E-ch and F-ch should be changed.

The steps 2) to 4) are repeatedly taken until the offset becomes 0 or the repeating time reaches the limit frequency.

1.3.3 EF bias auto-adjustment

This adjustment obtains the best focus point during the play mode and maximizes the RFI level by utilizing the phase difference between the 3T level of the RF signal and that of the signal obtained when focus error disturbance is applied to the focus loop. At this moment, the auto-gain control (AGC), where focus error disturbance is applied to the focus and tracking loops, is also performed as explained below.

<Adjusting procedures>

1) The microcomputer transmits the command to apply disturbance component to the focus loop (inside the servo LSI).
2) In the LSI, the 3T-offset component of the RF signal is detected.
3) From the relation between the 3T detected component and the disturbance, the LSI obtains the volume and direction of the focus offset.
4) The microcomputer transmits the command and reads out the detecting result from the servo LSI.
5) The microcomputer calculates the necessary correction and inputs the result as the bias adjustment value to the servo LSI.

The adjusting steps are repeated a few times for higher adjustment accuracy as same as those for the AGC.

1.3.4 Focus and tracking AGC

This function automatically adjusts the focus and tracking servo loop gains.

<Adjusting procedures>

1) Disturbance component is applied to the servo loop.
2) The error signals (FE and TE) are extracted through the band pass filter as the G1 and G2 signals.
3) The microcomputer reads the G1 and G2 signals through the servo LSI.
4) The microcomputer calculates the necessary correction and performs the loop gain adjustment inside the servo LSI.

For higher adjustment accuracy, the above steps are repeated a few times.

1.3.5 RF level auto-adjustment (RFAGC)

This adjustment minimizes the dispersion of the RF level (RFO), which may be caused by disc-related errors, for more stable signal transmission by changing the amp gain between RFI and RFO.

<Adjusting procedures>

1) The microcomputer sends the command to the servo LSI to read out the output from the RF level detecting circuit inside the servo LSI.

2) The microcomputer calculates the appropriate amp gain by using the output read out to adjust the RFO level at the prescribed one.

3) The microcomputer sends the command to the servo LSI to adjust the amp gain into the calculated one.

This adjustment is automatically performed when:

1) During the setting-up mode, only the focus close operation ends.

2) Immediately before the setting-up ends (or right before the play mode starts)

3) During the play mode, the focus loop is locked again after unlocked.

1.3.6 Preamplifier gain adjustment

In this adjustment, when the reflected beams from disc surface are extremely weak (ex. when the lens is dirty, and a CD-RW is loaded), the whole gain in the RFAMP block (FE, TE, and RF amplifiers) is increased by +6dB or +12dB.

<Adjusting procedures>

When the system senses that the reflected beams from disc surface are extremely weak during the setting-up mode, the whole RFAMP gain is increased by +6dB or +12dB.

After the gain is changed, the setting-up mode is restarted.

If the whole RFAMP gain is always increased to the +6dB level in the play mode, the +6dB level will be employed at the starting of the setting-up mode from the next playback.

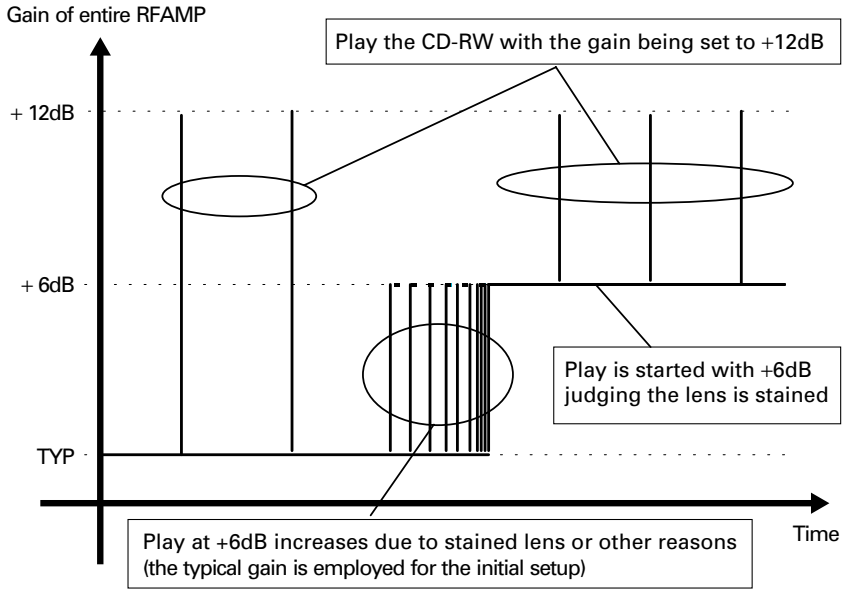


Fig.1.3.1 Pre-amp gain adjustment

1.3.7 Initial values in adjustment

For each auto-adjustment, the last adjustment results are basically used as the initial settings of the next adjustment unless the microcomputer is turned off (or the backup is off). When the microcomputer (or the backup) is turned off, the last adjustment results are not used, but the factory settings.

1.3.8 Adjustment result display

For some of the adjustments (FE and RF offset, FZD cancel, F and T gain, and RFAGC), the adjustment results can be displayed and confirmed in the test mode.

1) FE and RF offset

Reference coefficient = 32 ("32" indicates no adjustment required)

The display is expressed in the unit of about 32mV.

Ex. When the FE offset coefficient is 35:

35 - 32 = 3 x 32mV = 96mV

This means that the correction is about +96mV, and the FE offset before adjustment is -96mV.

2) F and T gain adjustment

Reference coefficient for focus and tracking = 20

The displayed coefficient / the reference coefficient indicates the adjusted gain.

Ex. When the AGC coefficient is 40:

40/20 = 2 times (+6dB)

That is, the gain was adjusted by +6dB.

(The original loop gain was half the target one. So, the whole gain was doubled.)

3) RF level adjustment (RFAGC)

Reference coefficient = 8

The coefficient 9 to 15 indicates increasing the RF level.

The coefficient 0 to 7 indicates decreasing the RF level.

When the coefficient display changes by 1, the gain changes by 0.7 to 1dB.

When the coefficient is 15, the gain is maximum or TYP + 6.5dB.

When the coefficient is 0, the gain is minimum or TYP - 6.0dB.

1.4 POWER SUPPLY AND LOADING BLOCK

The VD (8.3 ± 0.5V), the VD2 (5.6 ± 0.5V) and the VDD (5.0 ± 0.25V), which are supplied from the mother PC board, are used for the power supply. In this system, the following four power-supply signals are available: the VD (for the drive system), the V3R3 obtained from the VD2 via the 3.3V regulator (for the control system: 3.3V), the VDD (for the microcomputer: 5V), and the 3VDD obtained from the VDD via the 3.3V regulator (for the microcomputer: 3.3V).

In the WMA-supported mechanism CXK5661, the V2R5 obtained from the VD2 via the 2.5V regulator (for WMA decoder: 2.5V) is also used.

The microcomputer can turn on/off the CD driver (except for the load and eject modes) and the 3.3V signal by controlling the "CONT" and "CD3VON" signals respectively. To turn on/off the loading drive, there is no control terminal in the microcomputer, but the "LOEJ" input signal works as the control one. In the LCO output block, the "CLCONT" signal is used to switch between the loading mode and carriage mode.

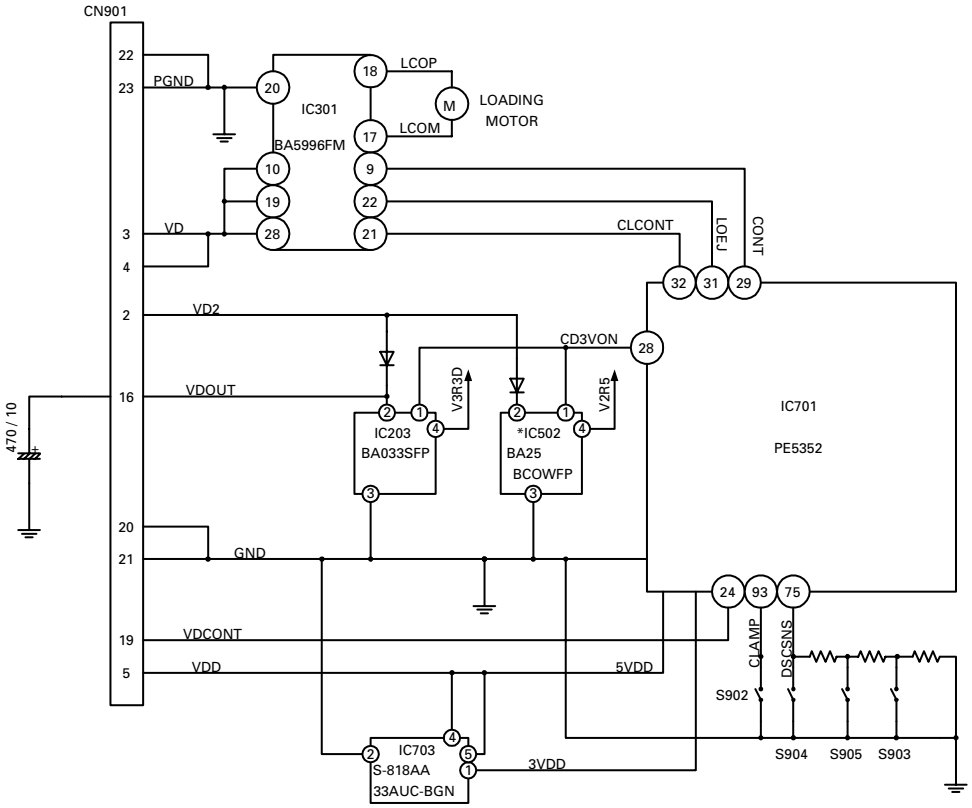


Fig. 1.4.1 Power supply/loading block (*: CXK5661)

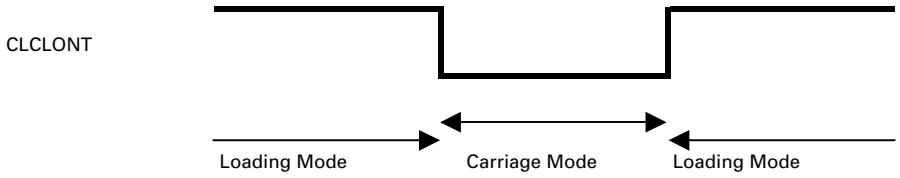
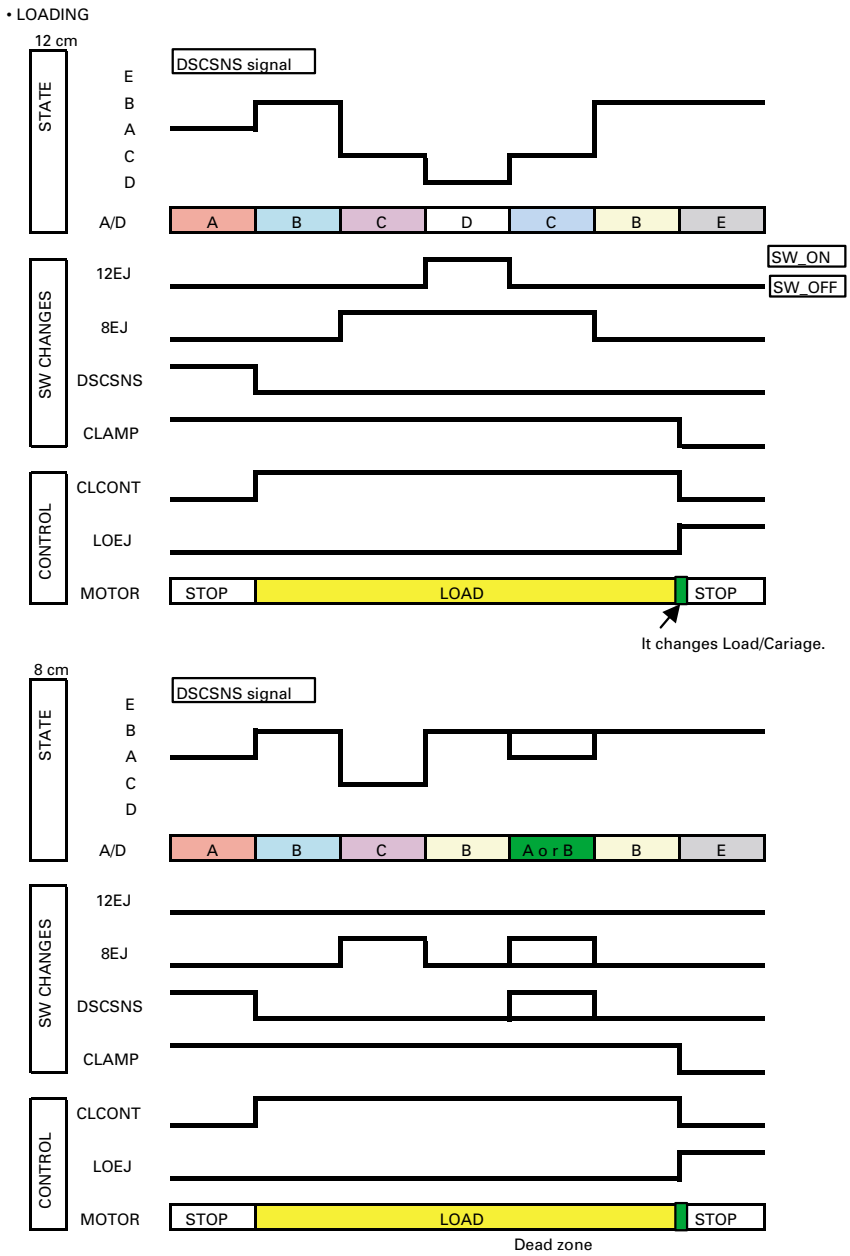


Fig. 1.4.2 Loading/carriage mode shift

To control the load and eject operations, the clamp switch located in the mechanism unit and the three detecting switches located in the control unit are used. Depending on the combination of these switches' ON/OFF status, the DSCSNS voltage changes.
The microcomputer can detect the status (A to E) by observing the voltage at the A/D port. The disc size detection (8 or 12cm) is also performed through this status change. The DSCSNS status and the status change in the load and eject modes are shown in the figures 1.4.3 and 1.4.4 respectively.

Status	A	B	C	D	E
SW1 S904	0	0	0	1	0
SW2 S905	0	0	1	1	0
SW3 S903	1	0	0	0	0
SW4 S902	1	1	1	1	0
Mecha	No DISC				CLMP

Fig.1.4.3 DSCSNS status



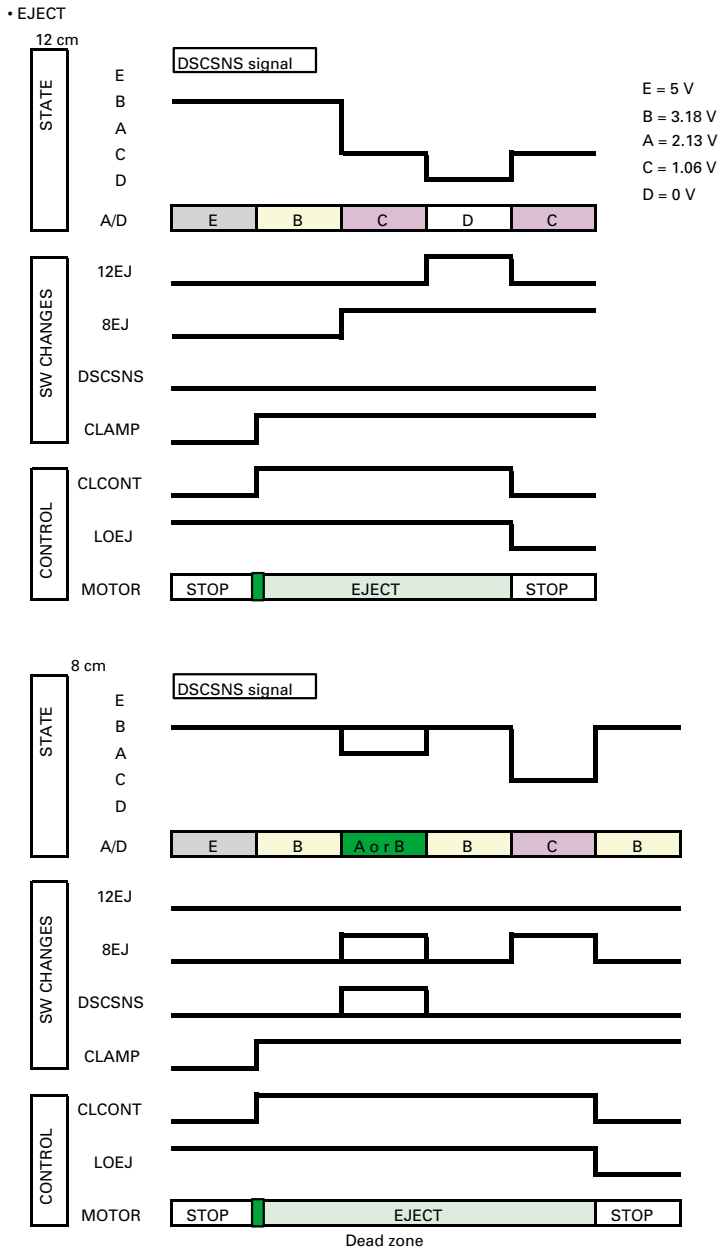
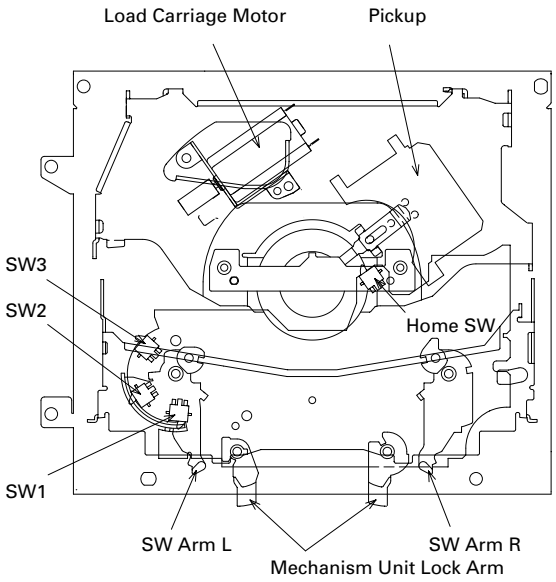


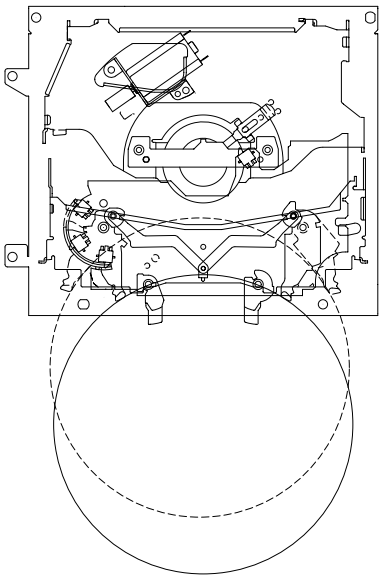
Fig.1.4.4 Status change in LOAD and EJECT modes

2. MECHANISM DESCRIPTIONS

● Loading actions

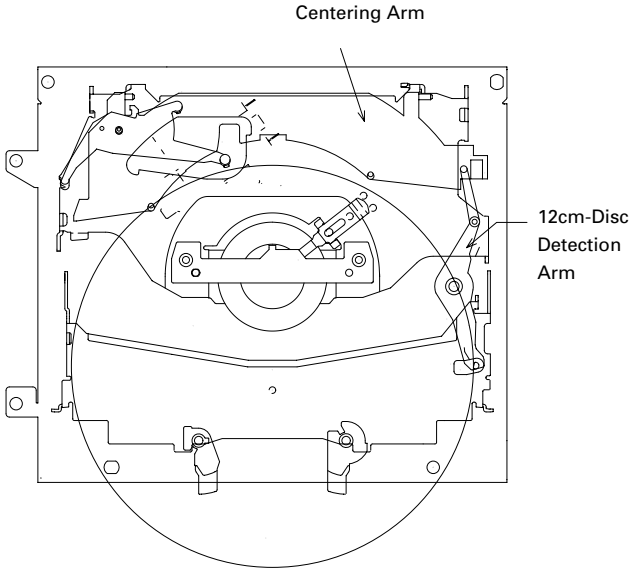
1. When a disc is inserted, SW Arm L and R rotate. Due to the rotation of Arm L, SW1 is switched from ON to OFF and the Load Carriage Motor starts.
2. If the disc is 12cm-disc, when it is carried to the position shown with the dotted line in the drawing, SW 3 switches to ON due to such rotation of Arm. Then, the microcomputer judges that the disc is 12cm-disc.
3. In case of 8cm-disc, the disc cannot reach such dotted line position, and from such limitation of approach, the microcomputer judges that the disc is 8cm-disc and simply triggers clamp actions.
   (Movement of SW Arm L and R are connected together. So, if pushing force is fed to only one arm, the distance between tow arms cannot be widened beyond the specific degree, because the coupling part is locked in such case.)

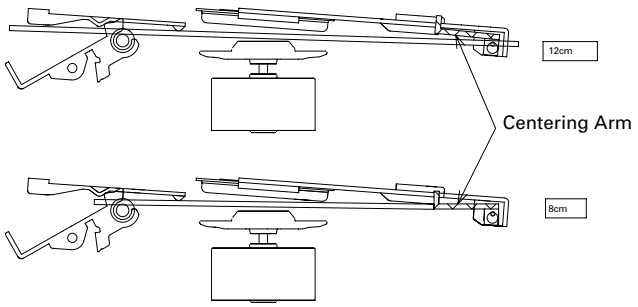




● Disc centering mechanism

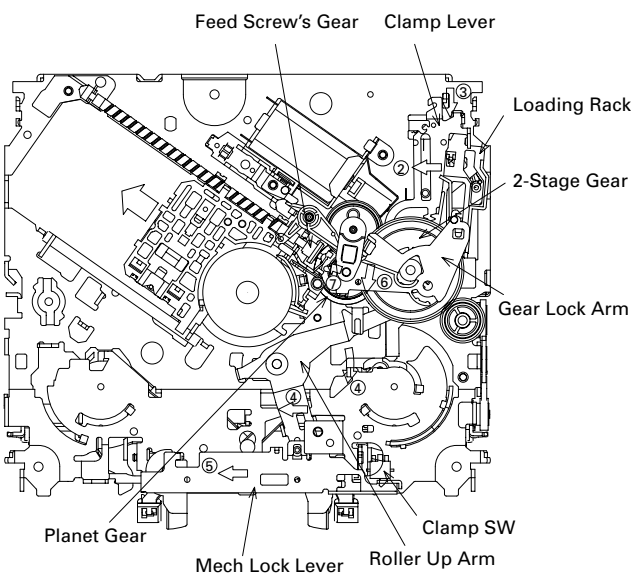
1. In case of 12cm-disc, the 12cm-Disc Detection Arm rotates, and with such rotation, it raises the Centering Arms to retreat the arms from disc's trace. The disc passes through under the arms, and at the inner part, it is centered.
2. In case of 8cm-disc, it is just centered at the position where its edge touches the front portion of the Centering Arm.

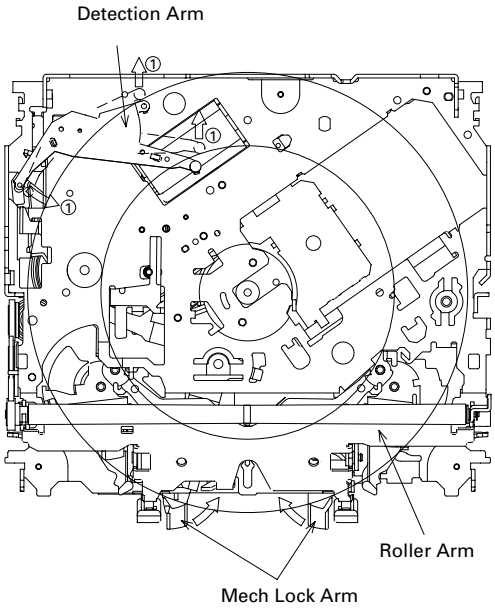




● Clamp actions

1. When an 8 or 12cm disc is placed on the center of the spindle, the detection arm starts moving.
2. The movement of the detection arm engages the loading rack with the 2-stage gear.
3. The clamp lever slides to lower the clamp arm. At this time, the roller up arm rotates to separate the roller arm from the disc. The roller arm moves the mech lock lever and turns the mech lock arm to release the mech lock. At the position where the clamp switch is turned off, the clamp operation ends.
4. After the clamp operation, the clamp lever moves to rotate the gear lock arm. The planet gear separates from the 2-stage gear to get engaged with the pickup feed screw's gear. Then the carriage operation will start.





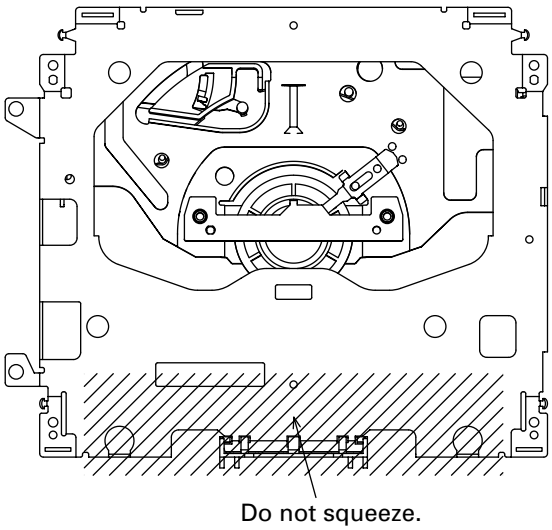
● Eject actions

1. Eject actions start when the Pickup is fed to the position inner than "Home SW ON" point in the internal circumference of the circle, caused by backward rotation of the Load Carriage Motor. Eject actions follow the foregoing procedures (steps taken in loading, centering and clamping actions), but each action in those steps is performed in reversed manner.
2. In case of 12cm-disc, Eject is completed when SW3 completes its condition- transition of OFF → ON → OFF.
3. For 8cm-disc, Eject is completed when SW2 completes its condition-transition of OFF → ON → OFF.

3. DISASSEMBLY

● How to hold the Mechanism Unit

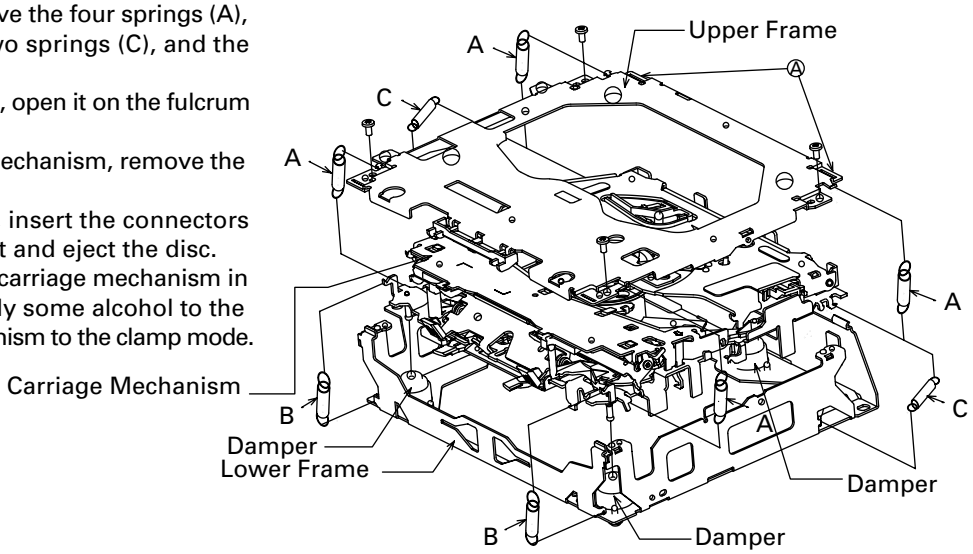
1. Hold the top and bottom frame.
2. Do not squeeze top frame's front portion too tight, because it is fragile.



● Removing the Upper and Lower Frames

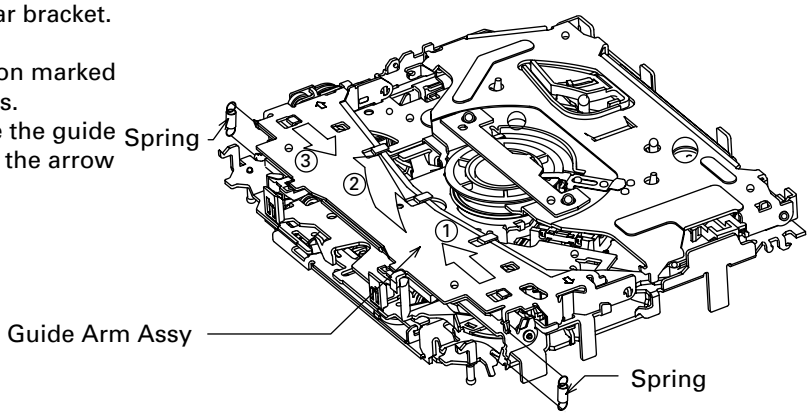
1. With a disc clamped, remove the four springs (A), the two springs (B), the two springs (C), and the four screws.
2. To remove the upper frame, open it on the fulcrum A.
3. While lifting the carriage mechanism, remove the three dampers.
4. With the frames removed, insert the connectors coming from the main unit and eject the disc.

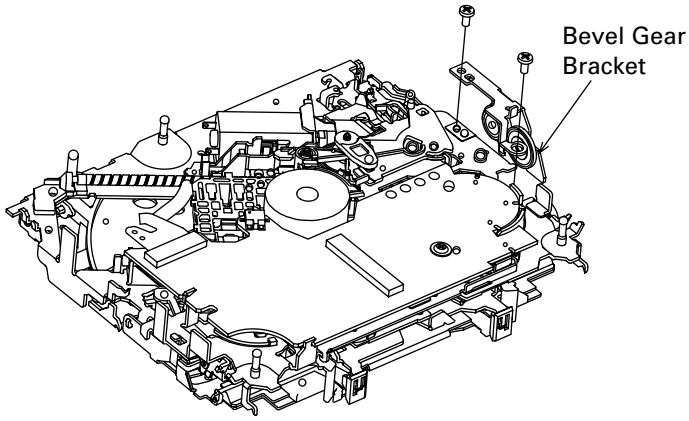
Caution: Before installing the carriage mechanism in the frames, be sure to apply some alcohol to the dampers and set the mechanism to the clamp mode.



● Removing the Guide Arm Assy

1. Remove the upper and lower frames and set the mechanism to the clamp mode.
2. Remove the two springs.
3. Remove the two screws and bevel gear bracket. Note that the gears come off.
4. Slide the guide arm assy in the direction marked with the arrow (1) and open it upwards.
5. At the angle of about 45 degrees, slide the guide arm assy in the direction marked with the arrow (3) to remove it.

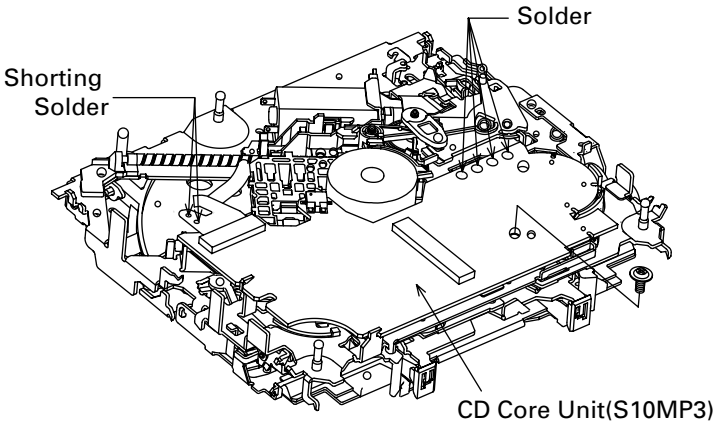




● Removing the CD Core Unit(S10MP3)

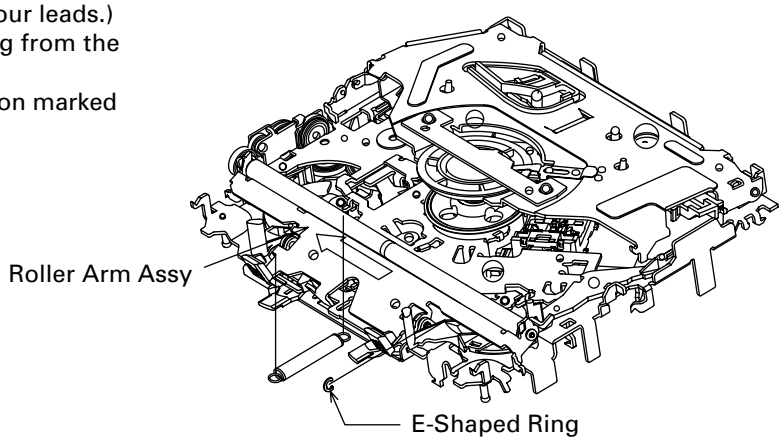
1. Apply shorting solder to the Pickup flexible cable. Disconnect the cable.
2. Remove the solder from the four leads, and loosen the screw.
3. Remove the CD core unit(S10MP3).

Caution: When assembling the CD core unit(S10MP3), set the mechanism to the clamp mode to protect the switches from any damage.



● Removing the Roller Arm Assy

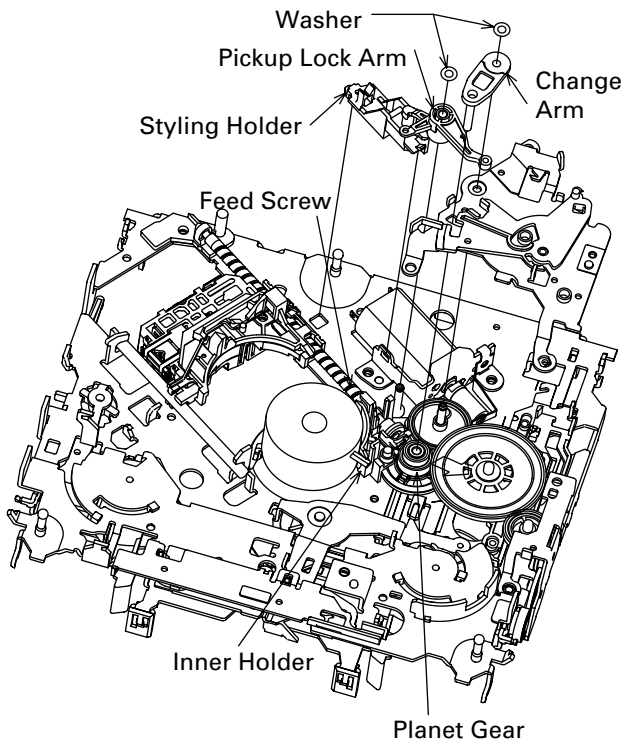
1. Remove the guide arm assy and set the mechanism to the eject mode.
2. Remove the CD core unit(S10MP3). (You do not have to remove the solder from the four leads.)
3. Remove the spring and E-shaped ring from the fulcrum shaft.
4. Slide the roller arm assy in the direction marked with an arrow.



● Removing the Pickup Unit

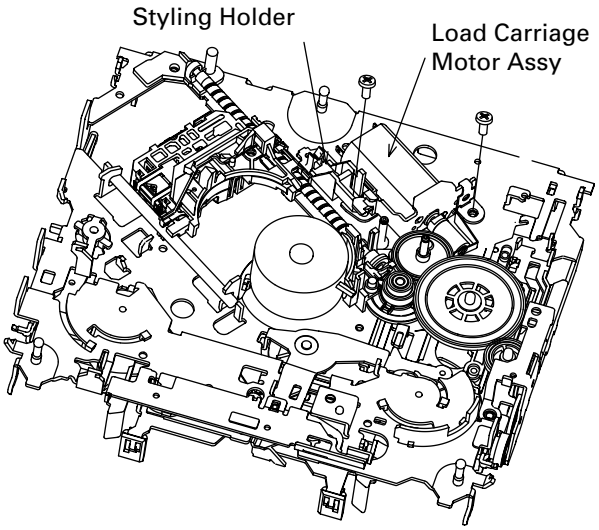
1. Set the mechanism to the clamp mode.
2. Remove the lead wires from the inner holder.
3. Remove the two washers, styling holder, change arm, and pickup lock arm.
4. While releasing from the hook of the inner holder, lift the end of the feed screw.

Caution: In assembling, move the planet gear to the load/eject position before setting the feed screw in the inner holder.



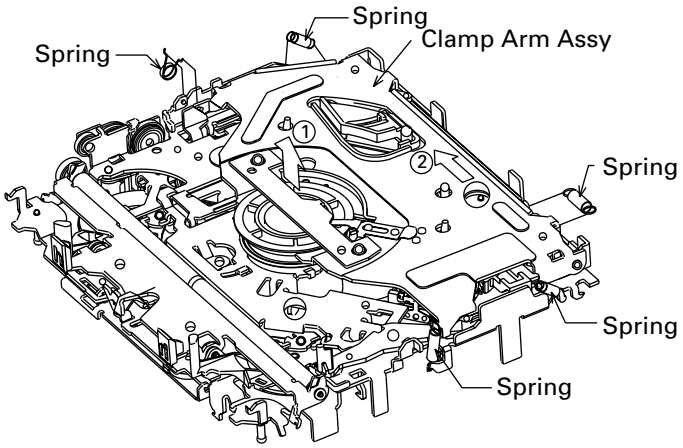
● Removing the Load Carriage Motor Assy

1. Release the leads from the styling holder and remove the holder.
2. Remove the two screws.
3. Remove the load carriage motor assy.



● Removing the Clamp Arm Assy

1. Remove the five springs.
2. While lifting the clamp arm assy, slide it in the direction marked with the arrow (2) to remove it.



● Removing the Spindle Motor

1. Remove the two screws. Take off the spindle motor.